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Edition 91. N° 1 **March 2024**

INC XLI WORLD NUT AND DRIED FRUIT CONGRESS
May 8-10, 2024
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p. 50

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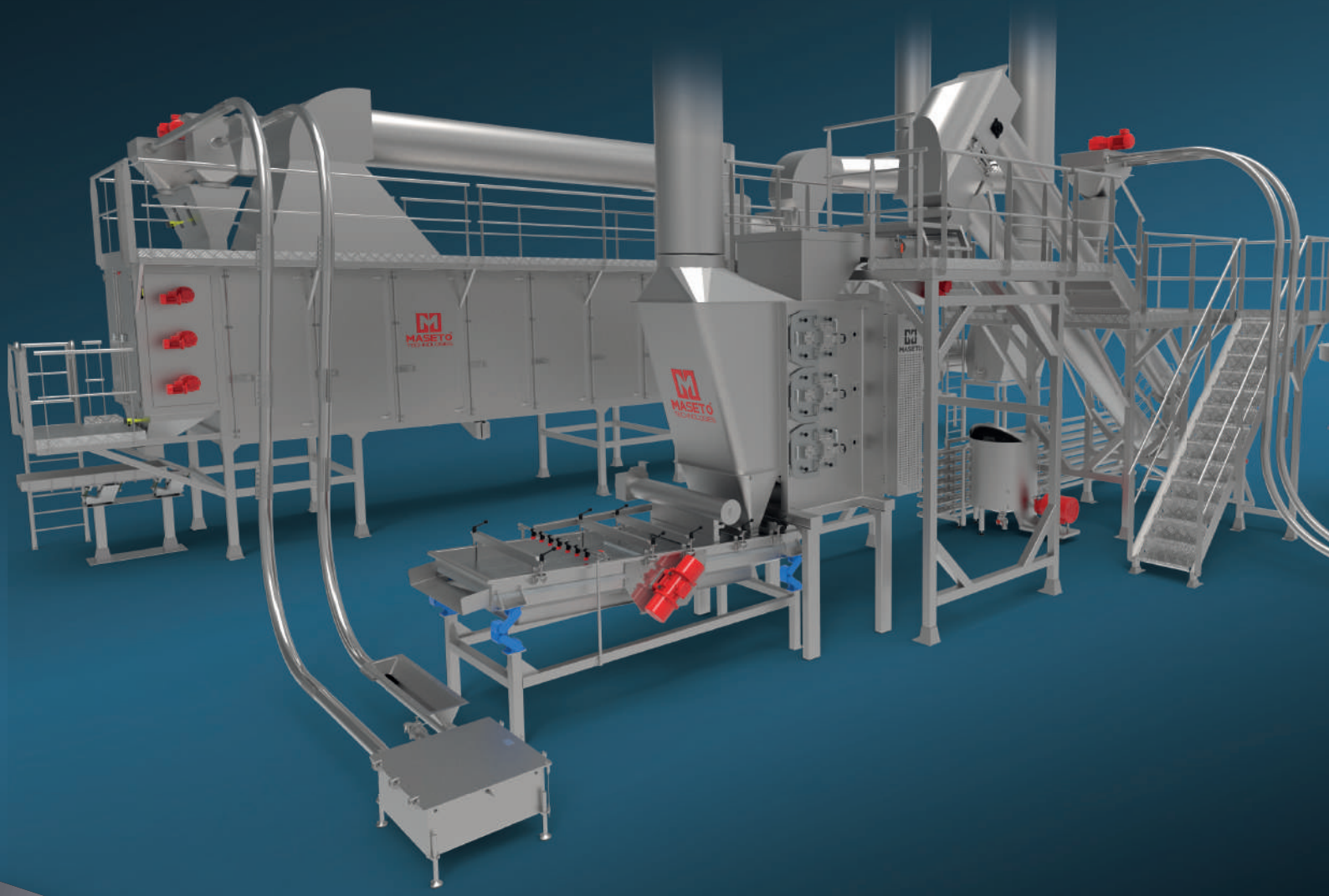

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NUTFRUIT
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Edition 91. Nº 1 **March 2024**

The INC is the international umbrella organization for the nut and dried fruit industry and the source for information on health, nutrition, statistics, food safety, and international standards and regulations regarding nuts and dried fruits.

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Seizing Opportunities on a Global Scale

MICHAEL WARING
INC CHAIRMAN

With improved and stronger demand accompanied by lower reported inventories at market, 2024 gives us reason to be optimistic. Ongoing challenges continue and specifically related to logistics and weather disruptions. In regards to predicted crop output and with harvest imminent in the Southern Hemisphere, we generally expect to see higher production than last season. I invite you to read the crop forecasts insights in this edition's statistical review.

For the INC, it has been a busy first quarter for our Executive team in Reus and the Executive Committee. A number of activities have been consolidated and our roadmap for 2024 has been clearly laid out which will be presented to you in the pages that follow.

In February, the INC Executive Committee met in California. Key items on the agenda included our new initiative "Country Outreach: Global Program for a Better World" and plans for the imminent launch of our dissemination campaigns in Latin America. The Committee approved NUTS 2025, a gathering of leading international nutrition researchers that will take place at the INC headquarters in October 2025. We also reviewed the foundation's end-of-year 2023 accounts and budget for 2024, as well as the status of the Vancouver congress and future INC events. All in all, it was a fruitful meeting where key decisions were made, innovative ideas were exchanged, and meaningful progress was made towards our strategic goals.

Also in February, the INC returned to Dubai for Gulfood, the world's largest annual food and beverage trade fair. This year, Gulfood hosted more than 5,500 exhibitors from 127 countries. Spanning an impressive 228 m^2 space, the INC Pavilion provided unparalleled visibility for our 26 co-exhibitors and served as an exclusive venue for networking and deal-making among industry leaders. Our pavilions at Dubai, SIAL and Anuga continue to provide a hub for our members to meet and network.

Looking even further ahead, the nut and dried fruit industry is gearing up for the most exclusive nut and dried fruit event of the year: the 2024 INC Congress. From May 8-10, more than 1,300 top industry executives —owners, presidents and CEOs of world-renowned companies— will gather at the Vancouver Convention Centre for three days of unrivalled insights into the nut and dried fruit sector. The organizing committee —Congress Co-chairs Stephen Meltzer and Ranjeet Wallia, INC Executive Director Goretti Guasch, and myself— is working to ensure that this year's INC Congress will be an event to remember, replete with insightful round tables, expert-led seminars, and a glamourous program of social events. What better way to keep your finger on the pulse of the nut and dried fruit world? For further information about the industry's flagship event, please see page 50 of this magazine.

I would like to finish this letter by inviting you all, if you haven't done so already, to read the 2023 INC Annual Report of Activities, now available on the INC website. I am grateful for your ongoing support for the INC, which is integral to the global accomplishments detailed in this report.

Thank you and I look forward to seeing you in Vancouver.

Kind regards,

Michael C. G. Waring

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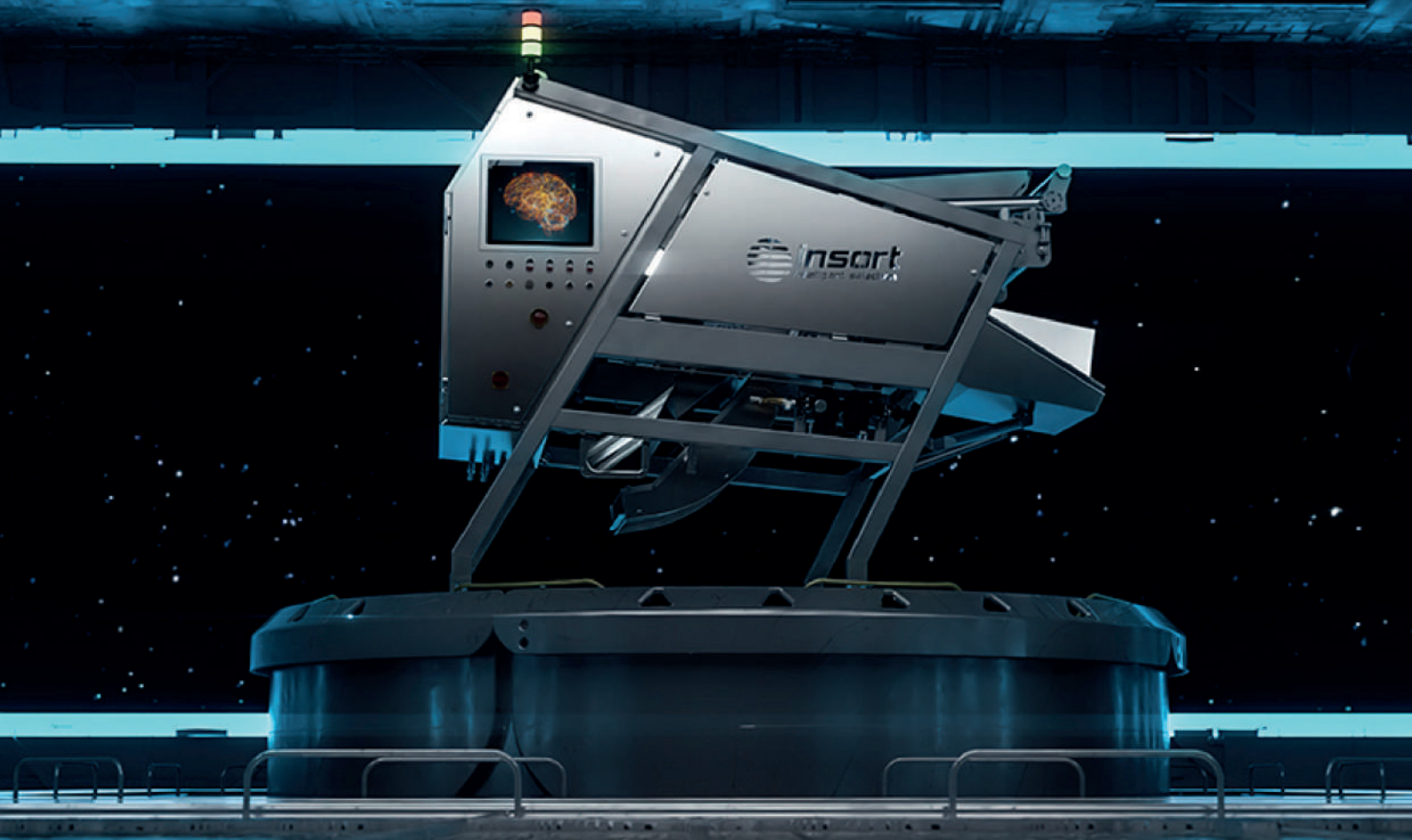

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Harnessing Consumer Awareness to Drive Global Nut and Dried Fruit Consumption

GORETTI GUASCH
INC EXECUTIVE DIRECTOR

In recent years, there has been a growing recognition of the health benefits associated with nut and dried fruit consumption. With the rise of new lifestyle trends towards holistic well-being and plant-based diets, nuts and dried fruits have gained popularity as a convenient nutritious snack. However, despite this trend, global consumption of nuts and dried fruits still remains below its full potential, especially in markets such as China, India and Latin America.

So, how can we unlock the consumer potential? By growing consumer product awareness. It may sound obvious, but it's true. Consumer product awareness serves as the bedrock of informed decision-making. From INC consumer research studies, it has become apparent that, today more than ever, this evaluation extends beyond merely considering the price tag; it encompasses factors such as nutrition benefits of a product, quality, environmental impact and ethical considerations.

This focus on all-encompassing product knowledge has been the backbone of the INC multi-country dissemination strategy since its launch in China in 2022. Now present in China, India and this year launching in Latin America, our campaigns, which target a Gen Z audience, use digital platforms and social media channels, specifically tailored to each region, to leverage awareness and disseminate information about the health benefits and versatility of nut and dried fruit consumption.

Taking into consideration cultural nuances, our campaigns strive to raise consumer awareness through informative content, and to share new and innovative ways of nut and dried fruit consumption. For example, in China, a market which has enjoyed a boom in the mixed nuts sector, innovation is key. Therefore, one of our initiatives focused on introducing nuts and dried fruits as both an essential ingredient and as toppings for ice creams. The content of this campaign focused on promoting a healthy lifestyle while still enjoying this sweet treat during the summer, which resulted in the campaign's hashtag becoming a trending topic on Douyin (Chinese TikTok). In India, where tradition mixed with the modernities of daily life is the essence of our target audience, blending this concept into our strategic approach for consumer awareness has been crucial for the success of the campaign, which has already reached 87 million Gen Zs in the country.

But as we know, digital promotion and raising consumer awareness on health benefits and consumption moments in these key regions, while essential, is not enough to grow consumption on a global scale. Due to consumer desire to assess all product aspects before making a purchase, the socioeconomic factor also comes into play.

In light of this, the INC will undertake an economic modelling study this year to assess the health and economic impact of increased nut consumption. Using data on actual nut consumption versus recommended intake levels, the study will identify the main diseases on which an increase in nut consumption could have an impact —and, in turn, the resulting decrease in healthcare expenditure at the societal level. This data will not only equip the nut and dried fruit industry with another compelling argument to promote increased consumption, but it will also strengthen our ability to encourage organizations and governments to endorse the INC's World Declaration of Nuts and Dried Fruits —an industry manifesto affirming that greater consumption of nuts and dried fruits will lead to positive change in the areas of climate change, sustainability and global health— and will help draw attention to the benefits of nut and dried fruit consumption on a global scale.

The importance of enhancing consumer product awareness to unlock the full potential of nut and dried fruit consumption is evident. And, through collaborative efforts between industry stakeholders, government agencies and health organizations, we can work towards a future where nuts and dried fruits are recognized and appreciated as integral components of a balanced diet. I invite you to read more about our global programs in the following pages in this edition of *Nutfruit* and join us in our initiatives to help us raise consumer product awareness of nuts and dried fruit globally.

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Blue Diamond Growers Elects Steve Van Duyn as New Board Chairman

Following Blue Diamond Growers' annual meeting in November 2023, the almond co-op announced its new Board of Directors. Dan Cummings stepped down as chairman of the board and Steve Van Duyn was elected to the top post. Van Duyn is a Blue Diamond grower who has served on Blue Diamond Growers' Board of Directors since 2005 and has served as vice chair since 2021. He is the owner, president and CEO of Van Duyn Family Farms in Ripon, California, where he and his family grow almonds and walnuts. Kent Stenderup was elected as the Board's new vice chair. Three directors who were up for election —Van Duyn, Dale Van Groningen and Dan Mendenhall— were all re-elected to the Board. In addition, the two directors at-large, Joe Huston and Kristin Daley were re-elected to their seats.

China Receives First Shipments of Spanish Almonds

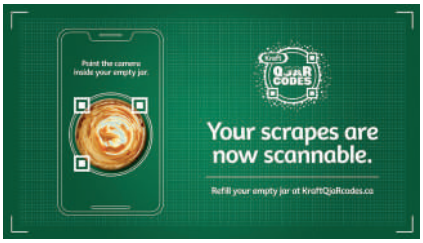
Following the signing of an agreement in March 2023 by the Spanish Ministry of Agriculture and the Chinese General Administration of Customs that sets out the conditions for exporting Spanish almonds to China, Unió Nuts, Dcoop and Crisolar Nuts have received authorization from the Chinese government to do so. Since China requires 100% product traceability, the companies underwent a lengthy process in order to gain export authorization from the Chinese authorities, including a strict audit of their farms. By early 2024, shipments of Spanish almonds were already arriving in China.

"The first Spanish companies have been authorized to export almonds to China."

Ferrero Supports Oregon State University Research to Help Hazelnut Orchards Thrive

The Italian multinational company Ferrero has made more than $500,000 in gifts to the OSU Foundation in support of hazelnut research at Oregon State University. The company joins longstanding industry supporters who have made substantial contributions for OSU research focused on hazelnut health and production. OSU is the state's top research university, earning more research funding than the rest of Oregon's public universities combined. Researchers are conducting innovative work related to the production of hazelnuts, the most important orchard crop of Oregon's Willamette Valley. The state produces 99% of the nation's hazelnut crop. "OSU is already doing what needs to be done in terms of consistently investing in research, and we want to allow that research to continue," said Tommaso De Gregorio, head of Ferrero's Agri Competence Centre.

Kraft Peanut Butter Promotion Uses AI-Powered Solution to Replace Empty Jars



In November 2023, Kraft Peanut Butter introduced a solution for the all-too-common woe of running out of the beloved spread. An innovative platform allowed 750 Canadian consumers to use their mobile device to scan the bottom of nearly empty jars of peanut butter to get a free jar of Kraft Peanut Butter delivered the same day. Powered by artificial intelligence technology, the tool turned the unique design of the scraping marks at the bottom of the jar into a QR code. The AI technology recognized the nearly empty jars and allowed a limited number of Canadians to order a new, full jar of peanut butter for free through Skip Express Lane.

Atitlan Acquires 800 Hectares of Pistachio Orchards and Plans to Build Spain's Largest Pistachio Processing Plant

Under a deal reached with AGNBRO Capital, Atitlan will integrate around 800 hectares of pistachio orchards in the Castile–La Mancha region into Elaia, its agricultural division, bringing the total number of pistachio hectares managed by the business group across the Iberian Peninsula to 3,200. The agreement also envisages the participation of Elaia and AGNBRO Capital, together with other producers, in a project to develop Spain's largest pistachio processing plant. The La Mancha Farms plant, located in Ciudad Real province, will have the capacity to process more than 9,000 metric tons per year. Elaia made its debut in 2007 with olive groves and has since expanded its crop portfolio to include almonds, oranges, clementines, lemons, grapefruit, avocados and pistachios.

Peanut Sprout Growing Facility With 1,000 Kg Daily Output Opens in Taiwan

In November 2023, Ubiquity Sprouting Corporation (USC) announced the opening of a peanut sprout production facility in Taiwan. With sprouts growing 3.5 times their weight in five days, the plant has a daily output of 1,000 kg. The facility operates with minimal energy, using only water for cultivation. USC has developed cost-effective technology to expand production rapidly, overcoming challenges often seen in traditional methods, such as bacterial and fungal issues. USC has crafted four distinct models for cultivating various vegetables and fruits, including bean sprouts, peanut sprouts, leafy vegetables, and vine vegetables and fruits. Previously, USC has successfully marketed mung bean sprout facilities in Taiwan and Mainland China, with a daily production capacity of 37,500 kg across 25 growing lines.

Official Opening of the Almond Board of Australia's Almond Centre of Excellence

More than 200 stakeholders attended the official handover of the Australian almond industry's center of excellence experimental orchard at Loxton North on November 14, 2023. The event marked the Almond Board of Australia (ABA) taking ownership of the 60-hectare facility in South Australia's Riverland and was celebrated with a field day that featured a range of in-field presentations showcasing the ongoing research. Up until now, the Almond Centre of Excellence (ACE) has been owned by the South Australian Government and managed by the ABA on a long-term lease. There are currently 13 trials underway at the orchard, investigating soil amelioration, rootstock and scion compatibility, planting density, pruning responses, architectural studies, cover crops, breeding evaluations and more.

TOMÁS TRESCHANSKI

CHEF AT TRESCHA
ARGENTINA

At a very young age, Tomás Treschanski left Argentina to train at Le Cordon Bleu and gain culinary experience in some of Europe's most storied kitchens, including those of Azurmendi (Spain), Frantzén (Sweden) and 108 (Denmark). He later returned to Buenos Aires and opened Trescha, which recently earned one of the first Michelin stars ever awarded in Argentina. The restaurant's experimental laboratory —known as the test kitchen— gives free rein to the chef's creativity and experimentation.

You spent several years working in some of Europe's top restaurants. How did these experiences shape your approach as a chef?

I believe that all the restaurants I've been through are part of me and shaped me into what my personality is within a kitchen. I was fortunate to be able to choose the restaurants where I worked. Also, many travels, both for eating and cooking, have contributed to my development. Beyond learning to cook in these restaurants, I learned to work within a kitchen, navigate teams and lead. I learned something different from each of them, and they all contributed different values to shape who I am today, which is obviously still evolving. One of the things I love most about this profession is that one never stops learning.

How would you describe your cooking style?

In our restaurant, we don't adhere to a specific cuisine. Instead, we create a synergy between various cultures, regions, countries, ancient eras and modern techniques to develop a cooking style that resonates with us at Trescha. We aim to work without borders, without constraints, which is why we avoid fitting into any particular category, although we do have a definite French base and Nordic and Asian influences in many dishes.

What prompted you to return to Argentina and open your own restaurant?

The arrival of the pandemic was certainly what brought me back to the country, which I hadn't planned. That's when the opportunity arose. But I believe that from the first day I stepped into a kitchen, I began to conceptualize my restaurant. There's undoubtedly a challenge that all chefs in our country share —to continually grow the culinary culture and encourage producers to work towards delivering better products every day.

How would you describe the experience of dining at Trescha?

An intimate experience, centered on flavor and the product, creating a relaxed yet enjoyable dinner where people can get to know us and see what goes on in our day-to-day. Expect to interact extensively with everyone working in the restaurant — sommeliers, chefs and the front of the house.

The test kitchen is one of the most fascinating features of Trescha. What role does this space play in the development of your dishes?

I consider myself a very anxious person; I always enjoy changing dishes, exploring new ideas, and constantly enhancing our

experience. The test kitchen is the place that allows us to focus exclusively on the development of dishes, techniques and ferments. We embrace mistakes, which are typically frowned upon in the kitchen. That's the beauty of R&D —through errors, we discover fantastic things.

In your opinion, how can nuts and dried fruits improve a dish?

Nuts have been part of our recipes for thousands of years, holding significant value in our culture. Personally, I am a big fan of them, using them for both flavor and texture.

What's next for Chef Tomás Treschanski?

Right now, I'm 100% focused on the restaurant and continuing to improve every day, which has been the goal from day one. Constantly challenging ourselves to be better than the day before. In the future, I would definitely like to create other spaces to share our ideas with more people.

QUICK-FIRE ROUND!

What do you enjoy the most about being a chef?

Eating is happiness —at least that's how I see it. We consistently deliver joy.

What is your personal favorite dish with nuts or dried fruits?

I love romesco sauce, a typical Spanish sauce made with tomatoes, almonds and hazelnuts, perfect for accompanying proteins or vegetables.

What is the next big culinary trend?

For me, flavor is the most important aspect when sitting down in a restaurant.

What nuts or dried fruits do you always have in your kitchen at home?

Hazelnuts, almonds, walnuts, pine nuts and pistachios, among others.

Duroc Pork Tenderloin With *Ajoblanco*

Marinade:

- 500 g water
- 30 g vinegar
- 40 g salt
- 15 g *merkén*
- 70 g oil

Mix everything in a container and reserve.

Nduja cream:

- 300 g blanched garlic
- 5 g milk
- 30 g olive oil
- 3 g salt
- 30 g nduja

Peel the garlic and blanch it 8 times in boiling water. Process in a Vitamix with the rest of the ingredients and filter.

Pork tenderloin:

- 400 g pork tenderloin
- 20 g *kōji*

Clean the pork tenderloin and reserve the trimmings. Roll the pork tenderloin in the *kōji*. Let it ferment in a fermentation chamber for 1 day. Before using, clean off all the kōji. Let it come to room temperature and brush it with the marinade. Cook over charcoal until the internal temperature reaches 50°C. Let it rest for at least 6 minutes.

Ajoblanco:

- 9 g garlic
- 20 g almond drink
- 5 g roasted hazelnut
- 20 g olive oil
- 0.6 g salt
- 7 g vinegar
- 19 g water
- 11 g bread

Cut the garlic and cook it in the almond drink. Once the garlic is cooked and the almond drink is removed from the heat, reserve. Toast the hazelnuts at 170°C for 15 minutes. Peel the hazelnuts. Process all the ingredients except the cold oil together in a Vitamix until you obtain a homogeneous mixture. Emulsify with the oil. Put in a bottle and reserve.

Burrito oil:

- 20 g *burrito* (*Aloysia polystachya*)
- 30 g parsley
- 67 g sunflower oil

Blanch the parsley and *burrito*. Put the herbs with the oil in the Thermomix at 80°C at low speed. Once it reaches 80°C, mix at speed 10 for 8 minutes. Finish processing on high in the Vitamix. Pass through a superbag. Put in a bottle and reserve.

Pig's trotter broth:

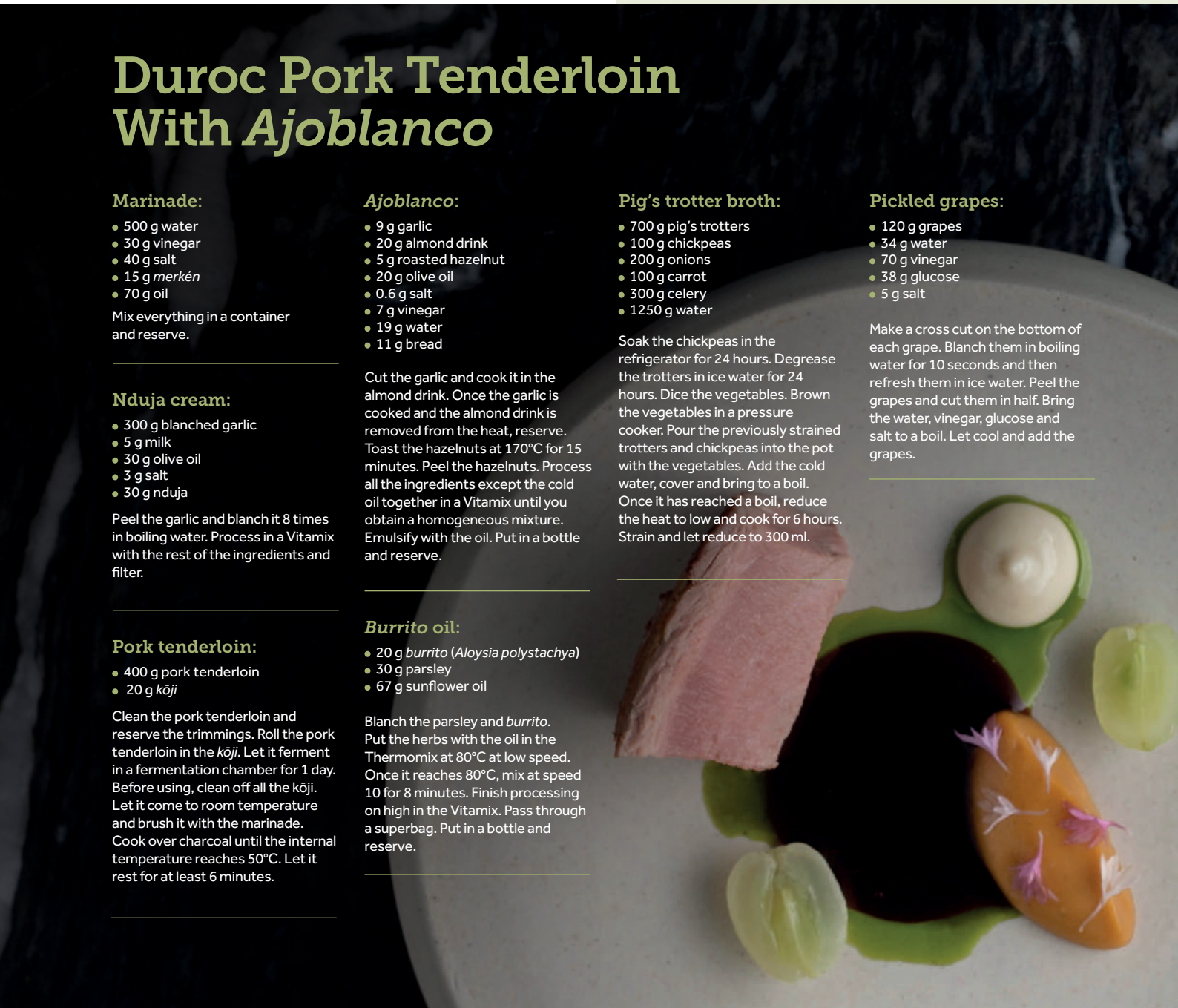
- 700 g pig's trotters
- 100 g chickpeas
- 200 g onions
- 100 g carrot
- 300 g celery
- 1250 g water

Soak the chickpeas in the refrigerator for 24 hours. Degrease the trotters in ice water for 24 hours. Dice the vegetables. Brown the vegetables in a pressure cooker. Pour the previously strained trotters and chickpeas into the pot with the vegetables. Add the cold water, cover and bring to a boil. Once it has reached a boil, reduce the heat to low and cook for 6 hours. Strain and let reduce to 300 ml.

Pickled grapes:

- 120 g grapes
- 34 g water
- 70 g vinegar
- 38 g glucose
- 5 g salt

Make a cross cut on the bottom of each grape. Blanch them in boiling water for 10 seconds and then refresh them in ice water. Peel the grapes and cut them in half. Bring the water, vinegar, glucose and salt to a boil. Let cool and add the grapes.



Sustainability

BRAZIL: IFRS Sustainability Disclosure Standards

Brazil plans to incorporate the International Sustainability Standards Board's (ISSB) IFRS Sustainability Disclosure Standards into the Brazilian regulatory framework. The roadmap set out by the Brazilian Ministry of Finance and the Comissão de Valores Mobiliários (CVM) envisages voluntary use of the standards starting in 2024 and mandatory use as of January 1, 2026.

EU: European Drought Risk Atlas

The European Commission's Joint Research Centre has published the *European Drought Risk Atlas*. This publication characterizes how drought hazard, exposure and vulnerability interact and affect various interconnected systems —agriculture, public water supply, energy, riverine transport, and freshwater and terrestrial ecosystems— and presents a conceptual and quantitative approach to drought risk for these systems.

EU: Regulatory Update

- **Council Adopts Negotiating Position on Sustainable Packaging Rules:** In December 2023, the Council reached an agreement ("general approach") on a proposal for a regulation on packaging and packaging waste. The proposal requires that all packaging be recyclable and that the presence of substances of concern be minimized. It also sets labeling requirements, sets binding reuse targets, restricts certain types of single-use packaging and requires economic operators to minimize the packaging used. The general approach will serve as a mandate for negotiations with the European Parliament on the final shape of the legislation.
- **Commission Withdraws Proposed Sustainable Pesticide Use Regulation:** Following the defeat of the Commission's proposal on the sustainable use of plant protection products in the European Parliament in November 2023, in February European Commission President Ursula von der Leyen announced that she would withdraw the proposal.
- **Sustainability Reporting Standards Published in Official Journal:** In December 2023, the European Sustainability Reporting Standards (ESRS) were published in the *Official Journal of the European Union* under Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023. This regulation sets the standards for companies to use in carrying out their reporting under the framework of the Corporate Sustainability Reporting Directive (CSRD). On February 7, the Council and Parliament reached a provisional deal to delay the adoption of sustainability reporting standards for certain sectors and for certain third-country undertakings. The agreement would give more time for companies to prepare for the sectorial ESRS and for specific standards for large non-EU companies, which will be adopted in June 2026, two years later than the originally scheduled date. The provisional agreement now needs to be endorsed and formally adopted by both institutions before it can be published in the *Official Journal*.
- **Future of Corporate Due Diligence Law Uncertain:** In December 2023, the European Parliament and Council negotiators reached a compromise deal on the Corporate Sustainability Due Diligence Directive (CSDDD). The law would set obligations for companies to mitigate their negative impact on human rights and the environment. However, the law was dealt a significant blow in late February when it failed to garner the necessary support in a Coreper (Council) vote.
- **Council Approves New Directive Banning Greenwashing:** In February 2024, the Council adopted the European Parliament's position on the directive empowering consumers for the green transition through better protection against unfair practices and better information. This directive will prohibit the making of a generic environmental claim without recognized excellent environmental performance relevant to the claim. After publication in the *Official Journal*, Member States will have two years to transpose the directive into their national legislation.
- **Council Adopts Position on Forced Labor Product Ban Proposal:** If adopted, this regulation would prohibit products made with forced labor, from any origin, from being placed or made available on the EU market or exported from the EU to third countries. The Council's negotiating position, adopted in January 2024, envisages the creation of a "forced labor single portal," which would provide access to relevant information and tools, including a single information submission point, where information concerning alleged forced labor violations can be submitted anonymously, as well as a database, guidelines and information on decisions taken.

TÜRKIYE-EU: Annual Meeting of the Türkiye-EU Cooperation Scheme on Hazelnuts

The annual meeting of the Türkiye-EU Cooperation Scheme on Hazelnuts was held in December 2023. This event brought together representatives from Türkiye, the European Union, Member States Italy, Spain and France, and Copa-Cogeca.

Topics discussed at the meeting included the 2022/2023 campaign, crop estimates for 2023/2024, agricultural policies, climate change and pests. The preliminary estimated hazelnut production figures (in-shell) for 2023/2024 reported were 650,000 MT for Türkiye; between 52,000 and 57,000 MT for Italy; 11,000 MT for France; and 6,900 MT for Spain.

Representatives of European hazelnut growers raised concerns about the unavailability of effective plant protection products due to stringent EU regulations, and how climate change will continue to exacerbate pest problems and impact quality, productivity and investments. The presentation aimed to sound the alarm about the lack of fully effective solutions against many of the pests and diseases affecting hazelnut orchards, which also puts them at a disadvantage compared to third countries.

EU officials praised Türkiye for its progress in bringing its number of RASFF notifications for aflatoxins in hazelnut down to practically zero, which in 2022 resulted in the country being removed from the list of countries subject to increased frequency of official controls for aflatoxins in hazelnut.

Trade

BRAZIL: Almond Imports from Argentina Allowed for First Time

Brazil and Argentina reached an agreement to allow the import of almonds from Argentina into Brazil. New phytosanitary requirements for Argentine almonds came into force on February 1, 2024. Under the new guidelines, a phytosanitary certificate issued by Argentina's plant protection authority will be required.

USA-EU: Deal Reached to Extend Pause on Tariff Dispute

Under a deal announced in December 2023, the United States and the European Union will extend the suspension of retaliatory tariffs until March 31, 2025 in the context of a longstanding steel and aluminum dispute.

The dispute dates back to 2018, when the US introduced tariffs on European steel and aluminum and the EU responded by introducing retaliatory tariffs on imports of certain American products —including peanut butter and processed cranberry products— into the EU. In 2022, the parties reached an interim agreement under which the EU suspended its retaliatory tariffs until December 31, 2023, to allow time for negotiations towards a longer-term solution.

Free Trade Agreements

- **Chile-EU:** In December 2023, Chile and the European Union signed an Advanced Framework Agreement and an Interim Trade Agreement.
- **China-Nicaragua:** A free trade agreement between China and Nicaragua took effect on January 1, 2024. Under this agreement, 60% of goods traded between the two countries are exempt from tariffs immediately.
- **China-Serbia:** China and Serbia signed a free trade agreement on October 17, 2023.
- **EAEU-Iran:** On December 25, 2023, the Eurasian Economic Union (EAEU), which consists of Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia, signed a free trade agreement with Iran.
- **New Zealand-EU:** In late November 2023, the European Council gave the green light to a free trade agreement between the EU and New Zealand. The agreement can enter into force once it has been ratified by New Zealand.

Food Safety

CALIFORNIA: Private Applicator Certificate ("Brown Card") Changes

Under new regulations effective as of January 1, 2024, individuals currently certified as private pesticide applicators are required to take and pass the revised initial Private Applicator Certificate (PAC) Examination to demonstrate competency with the revised private applicator standards in 40 CFR Part 171.

EU: Plant Protection Products Update

The *Official Journal of the European Union* published regulations affecting the following substances:

- **Glyphosate:** Commission Implementing Regulation (EU) 2023/2660 renews the approval of the active substance glyphosate for a period of 10 years.
- **S-metolachlor:** Commission Implementing Regulation (EU) 2024/20 concerns the non-renewal of S-metolachlor.
- **Triflusulfuron-methyl:** Commission Implementing Regulation (EU) 2023/2513 concerns the non-renewal of the approval of triflusulfuron-methyl.

EU: Mycotoxin and Plant Toxin Sampling and Analysis Methods

The *Official Journal of the European* Union has published new Commission Implementing Regulations establishing the methods of sampling and analysis for the control of the levels of mycotoxins (Commission Implementing Regulation (EU) 2023/2782) and plant toxins (Commission Implementing Regulation (EU) 2023/2783) in food. Both regulations shall apply as of April 1, 2024.

NETHERLANDS: Food Safety Authority to Monitor MOAH in Various Products

The Netherlands Food and Consumer Product Safety Authority is monitoring mineral oil aromatic hydrocarbons (MOAH) in various foodstuffs in accordance with a temporary enforcement policy that came into effect as of January 1, 2024.

Action limits:

- Dry foods with low fat/oil content (≤4% fat/oil): 0.5 mg/kg
- Foods with higher fat/oil content (>4% fat/oil): 1.0 mg/kg
- Fats/oils or foods with >50% fat/oil content: 2.0 mg/kg

TÜRKIYE: Food Codex Contaminants Regulation

The Turkish Food Codex Contaminants Regulation was published in Türkiye's official gazette on November 5, 2023. This regulation establishes maximum limits for certain contaminants in food products and sets out the responsibilities of food business operators to determine, prevent, reduce and eliminate sources of risk.

Labeling

INDIA: Goa Cashew Secures Geographical Indication Tag

According to the *Times of India*, Goa cashew has been granted the Geographical Indication (GI) tag. This distinction, which is conferred upon products originating from a specific region, will enable buyers to differentiate between authentic cashews from Goa and those sourced from outside the southwestern Indian state.

SWITZERLAND: Labeling of Foods Bearing a Health Claim

Under a new Swiss regulation on the labeling of foods bearing a health claim, published in the country's official gazette on February 1, 2024, the origin of the main ingredient is only required if it is present in significant quantities and if otherwise the consumer could be misled about the true origin of the ingredient. The regulation aims to reduce barriers to trade by permitting the indication of larger geographical areas (e.g. "EU") as indication of origin. This regulation applies to voluntary indications only.

Marketing Orders

USA: Temporary Relaxation of Requirements for California Raisins

The U.S. Department of Agriculture (USDA) announced an interim rule that temporarily changes the requirements for raisins covered under the Federal marketing order for raisins produced from grapes grown in California. For the 2023/24 crop year, the minimum requirements for substandard and maturity dockage in the marketing order's handling regulations will be relaxed to accommodate raisins adversely impacted by severe weather conditions.

USA: Assessment Rate Decreased for California Walnuts

A rule issued by the U.S. Department of Agriculture (USDA) implements a recommendation from the California Walnut Board to decrease the assessment rate for California walnuts handled under Marketing Order No. 984. This rule decreases the assessment rate for California walnuts handled under the Order from US$0.0125 per in-shell pound, the rate that was initially established for the 2023–2024 and subsequent marketing years, to US$0.011 per in-shell pound. The rule takes effect on February 29, 2024, and will remain in effect indefinitely unless modified, suspended or terminated.

Creating Collaborative Trails to Sustainable Nuts

ofi has spent more than a decade implementing programs to improve the environmental and social impact of almonds, cashews and hazelnuts. Most recently, the company has launched dedicated sustainability strategies focused on the specific challenges of each supply chain. This project was the winner of the 2023 INC Excellence in Sustainability Award.

Consumers increasingly want to know that the ingredients in their nut-based products are healthy for the people and landscapes they come from. They want to support a supply chain where farmers make a decent living, their children go to school and nature is protected. However, each nut faces its own challenges:

- **Cashews:** Cashew farmers are among the poorest in the world. The 2030 targets set out in ofi's Cashew Trail focus on improving economic opportunity in smallholder communities by increasing average yields by 50% and helping 250,000 households improve their livelihoods, while also addressing health, education, gender inclusion and climate action.
- **Hazelnuts:** Since 2012, ofi has partnered with governments, NGOs, industry bodies and customers to improve social and labor conditions in Türkiye's hazelnut supply chain. The 2030 targets for the Hazelnut Trail include training 100% of all female seasonal migrant workers on health, nutrition and labor rights; implementing child labor monitoring and remediation in all managed programs; training 100% of farmers on crop residue management; and achieving traceability for 80% of their hazelnut volumes.
- **Almonds:** Over many years, ofi has invested in practices and infrastructure across its almond orchards in Australia and the United States, focused on water and emissions reduction, carbon capture, bee-friendly farming and carbon footprint reduction. Now the company is working to expand its impact under the 2030 Almond Trail strategy and targets.

How, exactly, is ofi pursuing the ambitious goals set out in its Cashew, Hazelnut and Almond Trails? Having teams on the ground in farming communities and on ofi's own estates is essential. ofi constantly innovates to deepen the company's physical and digital presence on the ground.

In parallel, digital tools like Olam Direct help provide farmers with an easier route to market. This app enables farmers to transact with ofi directly and gain visibility into regular market prices, while also providing advice on weather forecasting, planting and fertilization strategies, and inputs. It also allows ofi to digitally trace crops back to the farmers.

ofi agronomist collecting data from a hazelnut farmer. Photo courtesy of ofi.

Outcomes

ofi formed its first farmer group in Côte d'Ivoire in 2008. With customers and partners such as GIZ, ComCashew and GAIN, the company has supported 50,000 smallholder cashew farmers in Africa and Asia through 24 sustainability projects.

After the launch of the Cashew Trail, ofi ramped up its sustainability efforts. In 2022 alone, more than 21,000 farmers were trained on good agricultural practices in Vietnam, Côte d'Ivoire, Ghana and Nigeria. The company has distributed approximately US$1 million in premiums to support the livelihoods of smallholder farmers. Around 80,000 beneficiaries have been reached through health and nutrition programs organized within cashew communities.

In 2018, ofi worked with farmers and labor contractors in its supply chain to introduce labor contracts for hazelnut harvest workers —a first for the hazelnut sector, and also for Türkiye's agriculture sector. Contractual agreements were signed by 11 labor contractors and farmers and 535 seasonal workers, with the approval of the Turkish Employment Agency (İŞKUR).

As for traceability, ofi is constantly innovating to gather better data, improve traceability, and plan social and environmental initiatives. Over 9,000 hazelnut farmers are registered on the ofi Farmer Information System (OFIS), which uses GPS and detailed surveys to provide a new level of insight for ofi's field teams into how to increase farmers' yields and quality.

In partnership with the International Labour Organization, the Turkish Ministry of Education and local governorships, ofi established 24 summer schools for children of seasonal workers, which were attended by 423 children in 2022. These schools provide safe spaces where children have access to libraries, information technology classes, sports and playground facilities, and healthy daily meals. ofi has also renovated worker houses in selected villages to provide access to basic services such as clean water, electricity and proper toilets.

"Consumers want to support a supply chain where farmers make a decent living, their children go to school and nature is protected."

Since 2013, ofi has had extensive sustainability programs on the ground in Türkiye, supporting over 20,000 hazelnut farmers. By the end of 2022, ofi had trained more than 18,000 farmers on good agricultural practices and 3,500 female seasonal migrant workers on good social practices.

In ofi's almond business, sustainability programs kicked off in 2014 with bee-friendly farming and continued with initiatives around water, healthy ecosystems and biodiversity, greenhouse-gas reduction and supporting communities in growing regions. In 2020, ofi launched the "More Crop per Drop" trial to gain a better understanding of how almond trees behave under different conditions. The use of innovative technologies to track everything from tree growth to soil health is helping the company understand and reduce its water footprint.

Managed properly, almond production can be effective in capturing carbon. ofi has made its operations more fuel-efficient by reducing shaking and sweeping engine hours. Stepping up orchard carbon-capture activities, processing efficiency and the use of smart-farm technology are the keys to producing more while using less.

Finally, ofi relies on pollinators in Australia and the United States. Balancing pest control while fostering bee-friendly communities is a challenge. The company balances this risk through the controlled use (or non-use) of certain chemicals to deter unwanted pests while focusing on efforts to promote biodiversity and champion bee-friendly farming techniques.

Hazelnut farmer in Türkiye. Photo courtesy of ofi.

For more information about ofi's Cashew, Hazelnut and Almond Trails, visit:
https://www.ofi.com/content/dam/olamofi/products-and-ingredients/nuts/nuts-pdfs/ofi-cashew-trail-2022.pdf
https://www.ofi.com/content/dam/olamofi/products-and-ingredients/nuts/nuts-pdfs/ofi-hazelnut-trail-brochure.pdf
https://www.ofi.com/content/dam/olamofi/products-and-ingredients/nuts/nuts-pdfs/Almond-Trail.pdf

Achieving Sustainable Management and Efficient Use of Water Resources Through Groundwater Recharge and Outreach

Given the need to maintain a healthy agricultural economy in the face of variable weather, and to increase water storage in California's aquifers, the Almond Board of California (ABC) undertook an ambitious groundwater recharge program. This project was a finalist for the 2023 INC Excellence in Sustainability Award.

California's variable climate compounded by the effects of climate change has long been a concern for permanent crops such as almonds. Given that groundwater provides up to 60% of agricultural water supplies in dry years, and must support agricultural, environmental and urban demands, there is a strong public benefit in maintaining healthy aquifers.

The California Department of Water Resources (DWR) estimates the total storage capacity in California's aquifers at somewhere between 1.05 billion and 1.6 billion megaliters. In comparison, surface storage from all the major reservoirs in California is less than 62 million megaliters.

Given limited opportunities to develop new surface water reservoirs, groundwater recharge into aquifers can provide at least 10 times the storage of California's largest reservoirs, at a much lower expense. Recharge also provides a significant means of controlling the effects of flooding in years where there are excessive storm systems, protecting many of the rural communities that are at increased risk of severe economic impact.

Given the significant opportunity and necessity of increasing recharge to maintain a healthy agricultural economy in the face of variable weather, and to increase water storage in California's aquifers, ABC launched a recharge program focused on several goals: researching the role of working lands and almond orchards in increasing recharge; developing guidance for growers on how to do recharge; promoting recharge policies and incentives; demonstrating success with pilot projects that expand recharge opportunities and secure surface water supplies for recharge; and developing partnerships to create synergies for these goals.

The California almond industry (in partnership with the NGO Sustainable Conservation and researchers from the University of California) began research in 2015 to test the efficacy and safety of recharge in dormant almond orchards. The results showed that diverting excess water to almond orchards during the dormant season provided a significant opportunity to replenish depleted groundwater reserves, resulting in environmental, drinking water and climate resilience benefits with no negative impacts.

With the knowledge that orchards would not be negatively impacted, ABC launched an effort to put this research into practice with the development of a grower guide that would introduce recharge to growers who are faced with navigating complicated regulatory and permitting requirements in California. The guide, published and released at the 2021 Almond Conference, was the first of its kind to explain in depth to growers of any crop how they could support healthy aquifers based on their ecosystem through on-farm recharge. The guide has garnered significant attention, and has been distributed and used in numerous grower outreach efforts.

> *"The ABC grower guide was the first to explain in depth to growers of any crop how they could support healthy aquifers through on-farm recharge."*

The recharge guide and associated attention from regulatory and public audiences has created widespread almond grower awareness of the importance of this practice for water supply efficiency, resiliency, soil heath and flood mitigation. The solid foundation of research, grower guidance and NGO partnership created considerable synergies and encouraged grower support through government investments in recharge. A new grower incentive program was launched in 2022 by the USDA's Natural Resources Conservation Service (NRCS) to promote recharge in selected areas of the San Joaquin Valley. This pilot has since been expanded and appears on track to become a standard practice available to all growers.

DWR began a recharge pilot along the iconic Merced River (one of two large rivers that originate in the Yosemite Valley) with ABC's partner NGO, showcasing the importance of recharge as a way to store water given the expected decline of snowpack due to climate change. This pilot is being

Almond grower Christine Gemperle opens the water supply gate from a canal on her farm to flood dormant almond orchards and perform groundwater recharge using stormwater. Photo courtesy of the Almond Board of California.

Groundwater recharge on agricultural land provides multiple benefits including relieving downstream flooding, improving supplies for nearby drinking water wells, and improving agricultural water supply reliability. Photo courtesy of the Almond Board of California.

expanded into other watersheds in the San Joaquin Valley and is anticipated to provide immediate benefits, potentially mitigating some of the flooding that is anticipated in 2023 given this year's record snowfall.

For both the NRCS incentives and the DWR pilot, the ABC research and guide have provided a proof point for participating almond growers, building confidence in the safety, viability, opportunity and benefit of using their working lands and orchards for recharge.

Evolving climate conditions, extreme weather events and regulatory priorities are placing increased burdens on growers to find ways of producing food in an unpredictable environment. The record-breaking precipitation in early 2023, which followed a series of multi-year droughts in California, brought recharge to the forefront as the industry grappled with identifying options to farm under evolving growing conditions. Widespread flooding brought into sharp focus how working lands can be a solution for not only replenishing aquifers and addressing water scarcity but also helping to alleviate uncontrolled flooding, which can devastate rural communities.

The work by ABC served a significant role in helping growers prepare for the winter storms. Among the important outcomes of this initiative has been the fact that (1) recharge has become a central state policy to address the significant water supply challenges; and (2) regulatory burdens were reduced in the form of streamlined permitting by the state to enable growers to more quickly respond to 2023 flooding events.

ABC's guidance document, partnership with government and NGO partners, and grower outreach are now having a broader impact, as growers across multiple commodities explore and even embrace recharge. This has helped ensure growers and almond orchards will be part of the solution, contributing to healthy ecosystems, mitigating water scarcity and helping rural communities avoid devastating natural disasters caused by flooding. In the end, this ultimately helps ensure sustainable practices are available that support a stable food supply and the rural communities where food is grown.

For more information, see the ABC groundwater recharge guide: https://www.almonds.com/sites/default/files/2021-12/WO-6177_ABC_GroundwaterRecharge_Web_SinglePage.pdf

Boosting Macadamia Nut Production Sustainably Through Smart Orchard Design

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After completing her studies in biology and ecology in Leipzig, she began her research on bees in South African macadamia orchards, where she is investigating the needs and behaviour of pollinators in order to increase the yield and nut quality of macadamias in an environmentally friendly way.

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Figure 1. Honeybee drinking nectar from a macadamia flower. Photo: Mina Anders.

Traditional farming methods have often harmed the environment and reduced biodiversity. To combat these issues, we need more sustainable and environmentally friendly agricultural practices. Bees, which are essential for pollination, play a crucial role in growing many of the world's crops, including macadamia nuts. Finding eco-friendly ways to increase pollination and nut production is vital for environmentally conscious agriculture.

In a recent study conducted in South Africa,[1] our team explored how we can enhance pollination services for macadamia nut trees without breaking the bank. We observed the insects that visit macadamia flowers to find out what increased their number and how their visits affect nut production. Further, we experimentally excluded the pollinators from some flowers with mesh bags in order to see what would happen if there were no pollinators on the flowers at all, and artificially pollinated other flowers by hand to simulate nearly perfect pollination. We did this at two key stages: early nut formation (3 to 5 weeks after flowering), to evaluate pollination success, and later nut development (18 to 20 weeks after flowering), to see how final yields were impacted.

Macadamia trees, as mass flowering plants, are highly dependent on effective pollination. The study showed that insect pollination of the flowers significantly increased both early and final nut production —by 304% and 23%, respectively, compared to the exclusion of pollinators. However, even with insect pollination, there was still room for improvement in nut production, as hand pollination boosted yields by a remarkable 737% for early nuts and 367% for final nuts. This illustrates the potential for improving the pollination performance of insects.

Honeybees proved to be the most important pollinators of macadamia flowers in the farms observed and were responsible for 95% of all flower visits (Figure 1). Interestingly, it was not only the number of managed honeybee colonies that was decisive, but also the presence of natural habitats, such as uncultivated areas with shrubs and trees in the surrounding landscape. These habitats proved to be a more influential factor in increasing these visits than the honeybee colonies. We hypothesized that many of these honeybees were wild and originated from the

References:
1. Anders, M., Grass, I., Linden, V. M. G., Taylor, P. J., & Westphal, C. (2023). Smart orchard design improves crop pollination. *Journal of Applied Ecology*, 60, 624–637.

surrounding habitats. Moreover, we were surprised to find that common agricultural practices such as irrigation did not significantly increase nut production.

"When an orchard is adjacent to a natural habitat, arranging the rows perpendicular to the edge of the orchard results in a more than threefold increase in early nut production."

So, how can we improve pollination services? The solution does not require additional resources after the orchard is planted. It lies in the smart design of the orchards:

1. **Changing the row orientation:** Traditional macadamia orchards are arranged in rows of trees (Figure 2). However, the study found that, when an orchard is adjacent to a natural habitat, a perpendicular arrangement to the edge of the orchard results in a more than threefold increase in early nut production compared to parallel rows (Figure 3A). As most of the bees in the orchards originate from the neighbouring natural habitat, this arrangement makes it easier for them to fly into the orchard, because they prefer to follow the rows of trees instead of crossing them. Thus, on average, we found almost twice as many honeybees on the macadamia flowers in orchards with perpendicular rows compared to orchards with parallel rows.
2. **Mixing macadamia varieties:** The study showed that the initial nut set was larger in orchard blocks with three or more varieties (an average of 4.8 nuts per raceme) than in blocks with only one or two macadamia varieties (an average of 2-2.7 nuts per raceme) (Figure 3B). This difference was slightly lower for the final nut set. In many crops, cross-pollination between different varieties is known to increase the fruit set. This effect has also been observed in macadamia. This is where the honeybees come in: their important role as insect pollinators is to transport pollen between trees of different varieties. The variety investigated in our study was Pahala (also known as 788), a very common macadamia variety in the region.

The study strongly emphasizes the importance of pollination services for successful macadamia nut production. Through thoughtful orchard planning and utilizing the natural landscape surrounding the orchards, we can increase nut production without additional agricultural inputs. This research highlights the potential for ecological intensification through these smart design choices and the preservation of natural habitats. Recognizing the essential role of pollinators and introducing design measures that support their work not only boosts nut production but also contributes to the conservation of vital natural habitats. This approach is an important step towards a more sustainable and environmentally conscious future for agriculture.

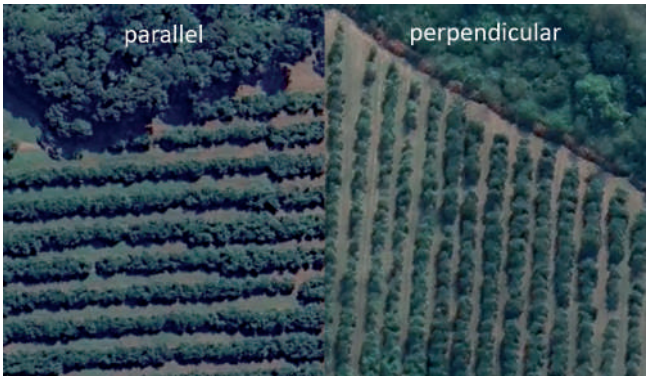

Figure 2. Examples of macadamia tree rows oriented parallel or perpendicular to the edge of the natural habitat. Google Earth Pro, 2020, Image © 2020 Maxar Technologies.

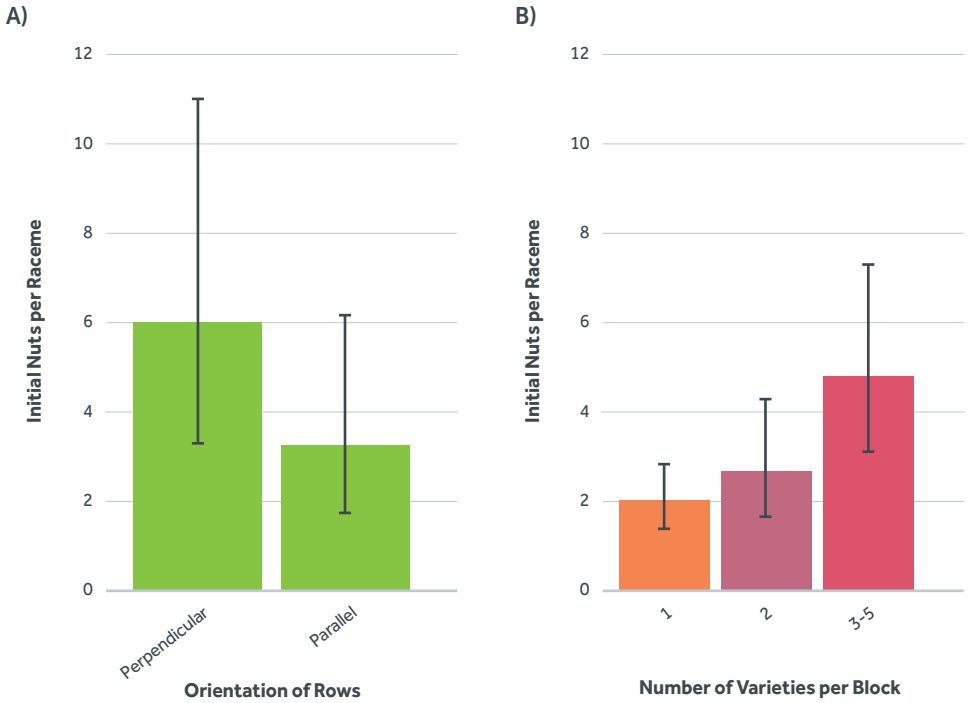

Figure 3. A) Effect of macadamia tree row orientation towards the natural habitat at the orchard edges on the initial nut set (3 to 5 weeks after flowering) and B) effect of the number of varieties in the macadamia block on the initial nut set.

Impact of Climate Change on Insect Pests of Walnut and Almond Crops in California

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Walnut and almond growers in California are expected to face a burgeoning rise of insect pest populations under the influence of climate change. Growers can take proactive actions to minimize future risks associated with these damaging pests.

Our recently published study in the journal *Science of the Total Environment*[1] has unveiled a looming transformation in the population of three major insect pests affecting walnuts and almonds —the codling moth (*Cydia pomonella*), the peach twig borer (*Anarsia lineatella*) and the oriental fruit moth (*Grapholita molesta*)— as a result of the projected temperature increase in future. Farmers have already been facing challenges dealing with these destructive pests, and any further rise in their population will likely have implications for the supply of these commodities along with impacts on the economy and employment.

Led by a team of interdisciplinary scientists from the University of California Division of Agriculture and Natural Resources, UC Merced, and the USDA California Climate Hub, the study delved deep into the intricate interplay between rising temperatures and insect life cycles and the subsequent impact on insect populations across California's Central Valley, the "food basket of the world." Leveraging a predictive model of insect pests' life cycle based on temperatures and future climate projections from the latest generations of climate models along with comprehensive data analysis, we found that climate change is expected to increase the population of these insects in future.

Central to this study is the impact of temperature on the insect pests' life cycle and the potential consequences for pest management. Warmer conditions can be more damaging because of the rapid development of insects, resulting in a quick population build-up. Warmer winter can also lead to an earlier-than-normal onset of insect activity in the spring. Our study found that populations of the codling moth, the peach twig borer and the oriental fruit moth are expected to increase in California due to their appearance in spring shifting earlier by up to 28 days, resulting in a reduction of up to 19 days in the time required to complete a generation by the end of the century. In the next 30 years, an additional half-generation of these pests is expected to arise within the growing season. The increase in the pest population is expected to be relatively higher in southern parts of California than in the northern parts. The temperature is projected to continue increasing,

Photo: Tapan Pathak.

resulting in a growing pest population, if the current trends of greenhouse gas emissions are not curbed.

The implications of this projected surge in insect pest populations are serious considering the vulnerability of the almond and walnut orchards to these pests. Almost all walnut plantations in California are susceptible to damage from the codling moth. Similarly, the damage to almond orchards caused by the peach twig borer and the oriental fruit moth can be very serious if not properly managed.

Although further research is needed to quantify the expected increase in damage due to rising populations of these pests, a greater number of generations of these pests in the same growing season generally means more damage to these commodities. It also increases the burden of spraying to control these pests, which would definitely increase production costs. In order to produce quality fruits and nuts, farmers have to manage multiple generations of these pests. Late generations are particularly destructive because they feed directly on the fruits and kernels, making them unmarketable. Moreover, more pesticide spray is not a solution, due to the risk of developing pesticide resistance, a decrease in the effectiveness of pesticide products at higher temperatures and in drier conditions, and a negative impact on beneficial insects and the environment.

We recommend adopting a climate-smart integrated pest management (IPM) approach to mitigate the possible increase in pest pressures in the future. IPM focuses on understanding the best biology, developing and refining monitoring tools, and adopting practices that are preventive and biological-based, keeping insecticide as a last resort. The climate-smart IPM approach may include practices that seriously consider the long-term management of pests or pest complexes, keeping future pest issues in mind. These practices include planting pest-tolerant crop varieties, developing tools to protect and utilize natural enemies, and applying bio-based technologies such as mating disruption. What is most important to deal with this crisis is the development and adoption of pest forecasting systems, including long-term prediction combined with short-term potential outbreak, pest monitoring and early detection systems.

Our study did not look at how these pests would adapt under high temperatures, particularly under various patterns of change in frequency, intensity and duration of high temperatures in the future, how natural enemies of these pests behave, or how these changes overlap with crop growth cycles. More research is needed to provide support and guidance to growers about the latest developments in pest management tools and how to adapt their practices to changing conditions.

Reference:
1. Jha, P. K., Zhang, N., Rijal, J. P., Parker, L. E., Ostoja, S., & Pathak, T. B. (2024). Climate change impacts on insect pests for high value specialty crops in California. *The Science of the Total Environment*, 906, 167605.

Targeted Breeding Innovations in Nut Tree Cultivars

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Prof. Kourosh Vahdati specializes in innovative solutions for challenging nut tree cultivation. He has consulted and managed commercial tissue culture labs and orchards, and introduced successful propagation protocols, demonstrating his commitment to sustainability.

In a chapter titled "Cultivars and Genetic Improvement" in the recent book *Temperate Nuts*, Prof. Vahdati and colleagues outline the main breeding objectives for temperate tree nuts and the various conventional and molecular strategies used to achieve these objectives. This article addresses recent cultivar development, emphasizing regional preferences and performance, particularly for walnut, hazelnut, pistachio, pecan and almond trees.

The demand for nut production has significantly increased due to the high economic value of nuts and their ease of storage and handling. This surge in demand, along with the necessity of developing nut trees for diverse climate conditions and to mitigate the negative impacts of climate change, has led to the implementation of multiple nut tree breeding programs worldwide. These programs aim to develop cultivars and rootstocks resilient to environmental stressors such as drought, heat and pests while maintaining high yields and superior nut quality.

Walnut

Walnut breeding programs globally have introduced a variety of new cultivars to meet the evolving needs of walnut growers. Notable additions include UC Wolfskill and Durham in the United States. UC Wolfskill shares similarities with Chandler in terms of yield, quality and color. Its high yield, early harvest, light kernel color, thin shell and adaptability to various climates have made it a market favorite. Durham, with a harvest date 10 days earlier than Chandler, produces jumbo-sized walnuts with light-colored kernels. This variety is known for its mid-season harvest, good yield, large nuts and light kernel color, positioning it alongside established cultivars like Howard, Tulare and Chandler. In France, new walnut cultivars such as Feradam, Ferbel, Fertignac and Ferouette stand out for their high yield, lateral bearing, thin shell, extra light kernel color and other desirable traits. New cultivars from China such as Xin2, Xin185 and Xiangling offer features such as moderate to high yield, lateral bearing, thin shell, early leafing, light kernel color and early harvest. However, their thin shell and lack of shell seal make them unsuitable for mechanical harvesting. In Iran, newly released Persia and Caspian showcase high yield, lateral bearing, late leafing, extra light kernel color and medium to early harvest.

Hazelnut

In Oregon, cultivars such as McDonald, Yamhill, Sacajawea, Jefferson, Dorris, Wepster, PollyO, Theta and Thompson have gained popularity for their resistance to diseases like Eastern filbert blight (EFB), bud mites and aphids. However, a new aggressive strain of EFB is infecting resistant hazelnut varieties in the Oregon and Pacific Northwest hazelnut industry, leading to increased surveillance and management efforts. The new Oregon-released varieties are currently undergoing field trials in Europe and Chile, where EFB is less of a concern. McDonald is favored for its EFB resistance, high yield and quality, while Yamhill has seen success in Chile and the US for its high yield, excellent kernel quality and EFB resistance, among other qualities. Varieties like Jefferson, Dorris, Wepster, PollyO and Theta offer reliable yields, good nut sizes and pest resistance. Thompson, tailored for high-density orchards, exhibits high resistance to EFB. However, older cultivars such as Barcelona, Daviana, Tonda di Giffoni and Tonda Pacifica face challenges due to


Photo: Kourosh Vahdati.

disease susceptibility. Barcelona is now considered obsolete in Oregon due to its vulnerability to EFB. Daviana is outdated, Tonda di Giffoni struggles with moldy kernels and Tonda Pacifica is not favored due to its susceptibility to EFB. While Tonda Pacifica suits Europe's blanched and roasted kernel market, its nuts are too small for the in-shell market. Tonda Francescana is gaining demand for its large nuts, high yield and excellent flavor in Europe, though it is still undergoing field trials in the US and Chile.

Pistachio

Advancements in breeding have led to the development of pistachio cultivars with higher yield, earlier harvest and better green kernel color. Rootstock development has focused on tolerance to soil-borne diseases, salinity and water stress. These developments have been instrumental in expanding pistachio cultivation to regions with challenging growing conditions. The new male and female pistachio cultivars are synchronized in their bloom periods, ensuring optimal pollination and fruit set. The Randy male variety is characterized by early flowering with a long bloom period, while Famoso produces a large quantity of pollen and has a bloom synchronized with Kerman. Lost Hills and Golden Hills, the newest California pistachio cultivars, have higher yields and earlier harvest and disease resistance. Lost Hills has large nuts and improved resistance to *Botryosphaeria*. Golden Hills has higher yields and early splitting, medium-sized nuts. In Iran, most growers cultivate the local cultivars Akbari, Ahmad Aghaei, Ohadi and Kaleh Ghoochi. In Türkiye, Kirmizi, Uzun, Halebi and Siirt are the major pistachio cultivars. The new Turkish cultivars Tekin and Akinci have higher yield and splitting rate than Siirt. Pistachio production has traditionally been under unirrigated conditions in Türkiye. However, in the past two decades, orchards have been irrigated, necessitating the need for new, suitable varieties.

Pecan

Several new pecan cultivars have recently been released in the US, each with unique characteristics and target markets. Pueblo is early-producing and well-suited for higher-density planting. Seneca is prized for its cream-colored kernels and adaptability to northern climates. Zuni is known for its disease resistance and large, well-filled kernels. Avalon and Kalos are both known for their scab resistance and high productivity, with Kalos offering larger, higher-quality nuts and a higher kernel yield. Zinner and Avalon are relatively new cultivars showing promise, with Zinner offering excellent nut quality, consistent production and good scab resistance, while Avalon boasts good precocity, stability in production and resistance to scab. Both cultivars provide potential solutions for growers looking to reduce input costs and maintain quality in pecan production in the Southeast. Among the older cultivars, Wichita is one of the most widely planted cultivars, known for its medium-sized nuts with a high percent kernel and good fill, but it is extremely susceptible to scab and water-stage split. Pawnee stands out for its large nut size and very early nut maturity. Choctaw produces thin-shelled nuts with a high oil content and rich flavor, ripening in late fall. Mahan is recognized for its large nut size and thin shell. Western requires a dry climate to lower the risk of scab disease and is considered low-maintenance in the right conditions. Desirable is a high-quality cultivar known for its large nuts and consistent crops, but it requires intensive fungicide protection due to its susceptibility to scab. Lakota requires significant management, such as thinning the nuts and addressing vivipary issues, making it a more challenging choice for growers due to its tendency for alternate bearing.

Almond

In the US, leading old cultivars include Nonpareil, Monterey, Independence, Butte and Carmel. Sweetheart was released later with mid-blooming and resistance to postharvest damage. Liberty offers high productivity and late harvest. Pyrenees is praised for its flavor and production. Yorizane, is self-compatible and comparable to Nonpareil. In France, Ferragnes is a popular self-incompatible variety known for its quality nuts. The newer self-compatible variety Lauranne offers versatility with its hard shell and big kernels. In Spain, Tardona and Mardia, with ultra-late flowering and self-compatibility, are valuable additions for orchards needing late blooming traits. Penta is another late-flowering variety (blooming a bit earlier than Tardona) that is very productive. Other self-compatible Spanish cultivars like Macao, Vairo, Marta, Marinada and Soleta provide growers with options suited to different conditions. Marinada is a highly productive, late flowering and very precocious variety. The Spanish cultivars of Florida and Alaska are self-compatible, soft-shelled and highly productive. Both cultivars have attractive kernels, with Florida ripening early and Alaska ripening later than Nonpareil. Most recently, two late-flowering cultivars named Saba and Aydin have been released in Iran.

Acknowledgment:
Appreciation is extended to those involved in the research and development of these cultivars, whose work underpins the ongoing success and innovation within the nut industry. I also would like to express my gratitude to Asaad Habibi for his valuable assistance. Additionally, I extend my appreciation to Shawn Mehlenbacher, Pedro Martinez Gomez, Xinwang Wang, Lu Zhang, Charles Leslie, Louise Ferguson and Salih Kafkas for their help in pre-reviewing the characteristics of the nut cultivars.

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Country/Product Spotlight

Brazil Nuts & Amazon Rainforest

Industry Highlight
An overview of production and trade

Brazil Nuts: The Hidden Gems of the Amazon Rainforest
Prof. Salo Coslovsky on the most iconic of all forest-friendly products from the Amazon

Health Benefits of Brazil Nuts
Learn about the nutritional qualities of Brazil nuts

New Product Launches
Insights into new products that utilize Brazil nuts

This Country/Product Spotlight is the 13th in a series of industry and market overviews in *Nutfruit* magazine. This report provides a snapshot of the Brazil nut industry in the Amazon Rainforest, with data, analysis and trends.

Industry Highlight

The Brazil Nut Industry in the Amazon Rainforest

100%
of global traded production

34,100 MT
annual exports (shelled, 5-year average)

27,600 MT
annual production (kernel basis, 5-year average)

8,400 MT
annual exports (in-shell, 5-year average)

Production

Bertholletia excelsa is one of the most economically significant plants of the Amazon rainforest due to its edible seeds, Amazonia nuts —most commonly known as Brazil nuts, although the world's largest exporter is not Brazil but Bolivia. The Brazil nut tree can live for up to 1,000 years and is one of the tallest trees in the Amazon basin, reaching up to 50 m in height. Its straight, cylindrical, unbranched trunk has rough gray-brown bark with longitudinal fissures and its canopy can measure 20-30 m across.

Brazil nuts are harvested from natural forests. They are among the most important non-timber forest products and play an important role in the preservation of the Amazon rainforest. The nuts are an important source of income for local communities that depend directly or indirectly on the Brazil nut trade.

The fruit of the Brazil nut tree is a large, round capsule measuring 10-12 cm across, with a hard, woody capsule wall. Each capsule weighs 0.5-2.5 kg and contains 10-25 seeds, which have a hard shell and triangular shape, measuring about 3.5-5 cm long and 2 cm wide. The woody outer casing is so hard that only one animal, the agouti, can crack it open with its powerful jaws and sharp, chisel-like teeth. The survival of Brazil nut trees depends on the agouti, which helps with the dispersal of seeds, and on bees, which facilitate pollination.

Brazil nuts have a tender, rich and mild flavor. They can be consumed directly, as a snack, or used as an ingredient in baked goods, confectionery and spreads. They are also processed into oil for human consumption or for use in cosmetic products.

Because Brazil nuts are a wild crop, annual yield is variable and environmental factors such as temperature and rainfall can have a significant impact. At the same time, economic factors also have an impact on amount gathered: strong demand enables collectors to venture deeper into the Amazon rainforest to collect more nuts. The collection period ranges from January to April.[1]

Although *Bertholletia excelsa* is found throughout the Amazon rainforest, all of the world's traded production of Brazil nuts is concentrated in Bolivia, Peru and Brazil (Figure 1). Nearly 70% of the global supply comes from Bolivia's Pando Department.

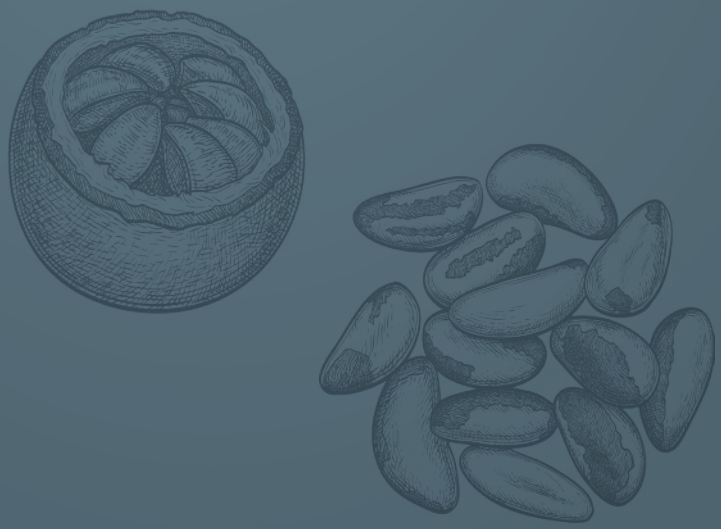
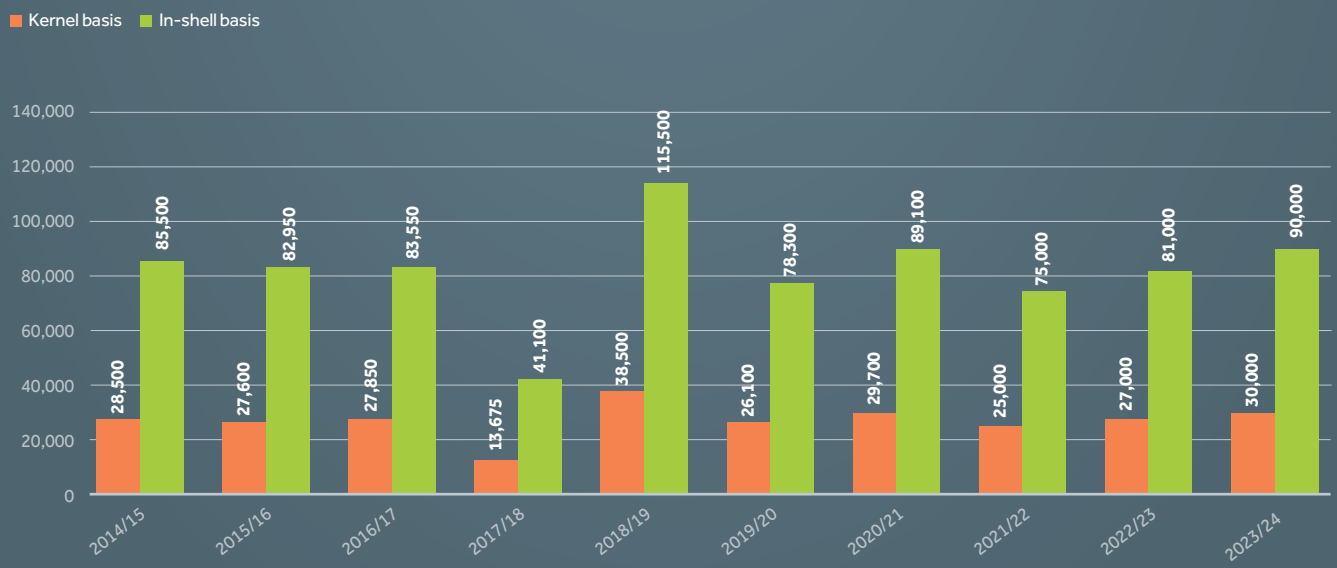


Figure 1.
Brazil Nut Growing Areas

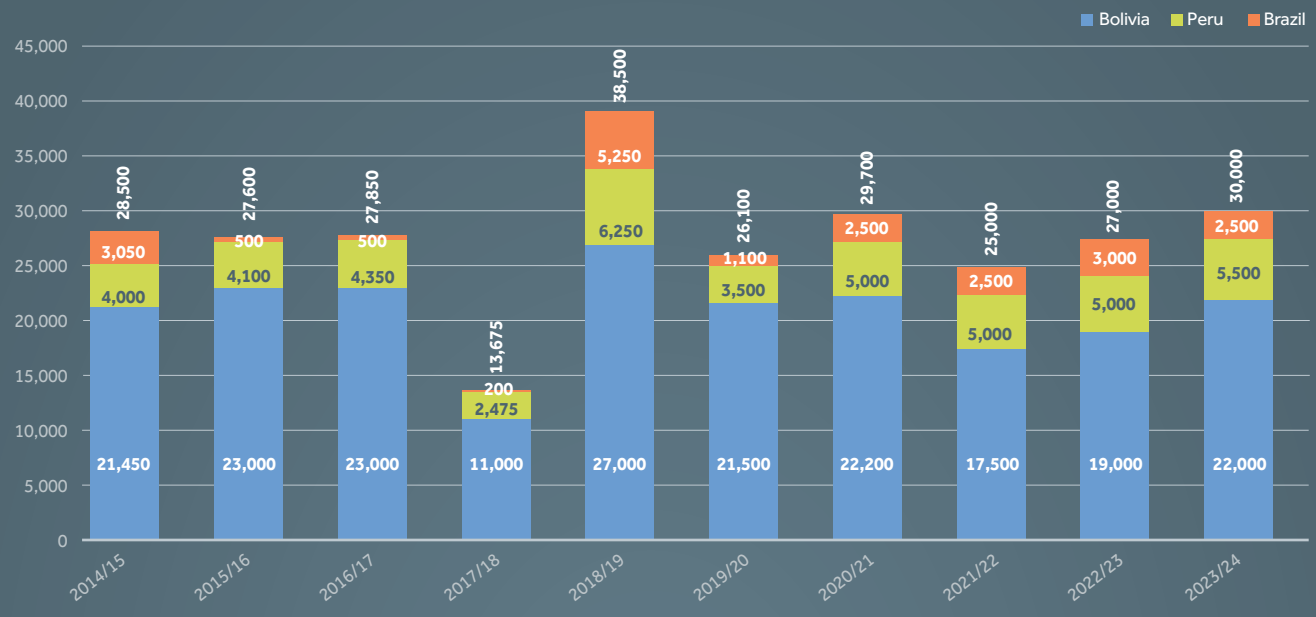
Global traded production of Brazil nuts averaged 27,600 metric tons (kernel basis) from 2019/20 to 2023/24 (Figure 2). Bolivia is the top producing country, with a five-year annual average crop of 20,440 MT (74% of global production), followed by Peru with 4,800 MT (17%) and Brazil with 2,320 MT (8%) (Figure 3). Strong demand in 2018/19 prompted harvesters to collect more nuts, leading to higher-than-usual production numbers for that season.

Figure 2.
World Brazil Nut Production, Metric Tons
Source: INC.



1. INC Brazil Nuts Technical Information Kit and references quoted therein.

Figure 3.
Brazil Nut Production by Country, Kernel Basis, Metric Tons
Source: INC.

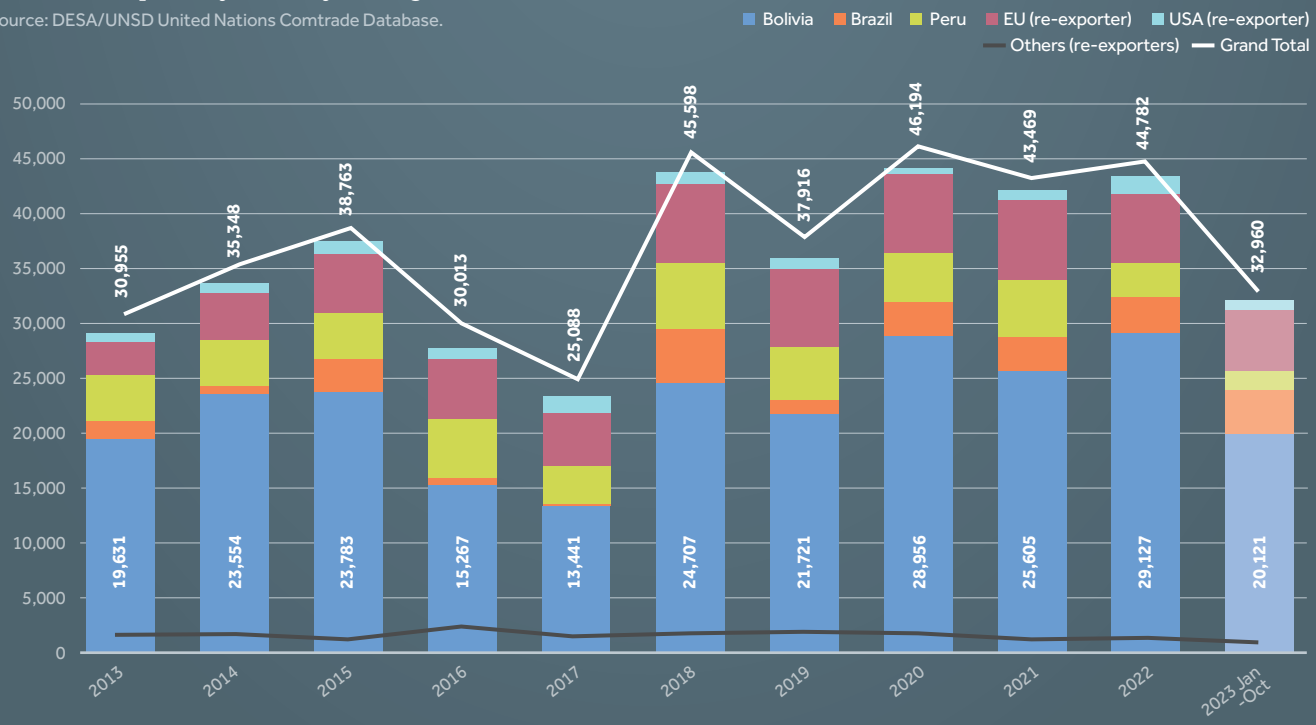


Trade

As local consumption is not significant in Bolivia and Peru, virtually all Brazil nuts produced in these two countries are traded. In contrast, there is some domestic consumption in Brazil, although exact figures are hard to come by.

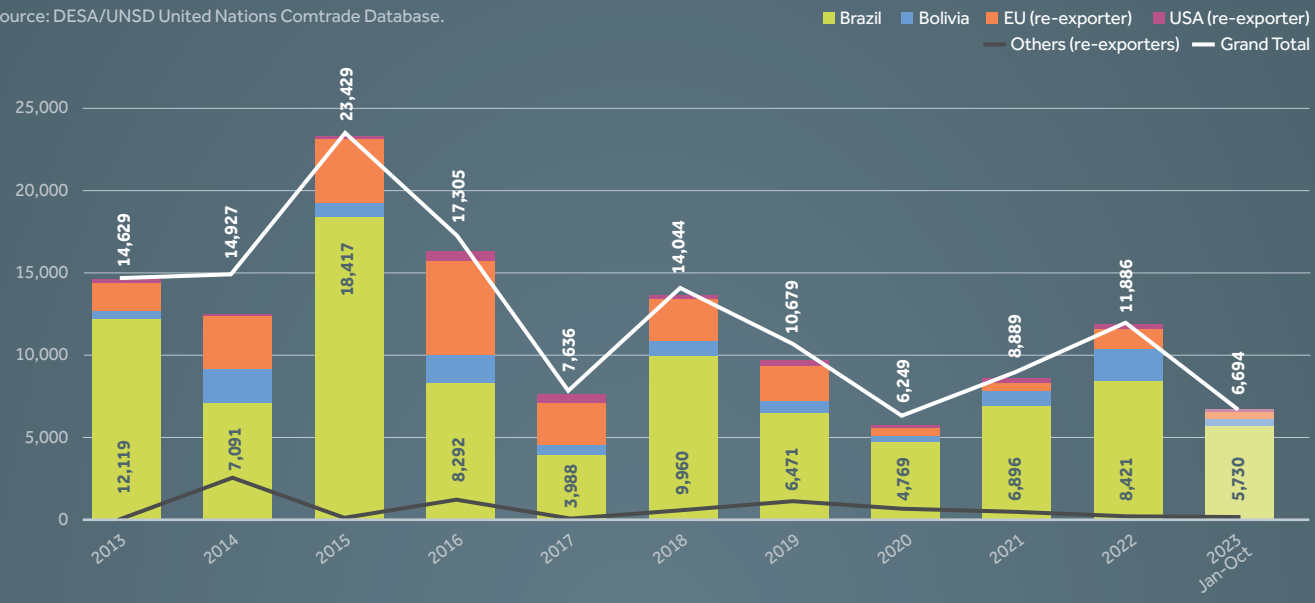
According to data from the DESA/UNSD United Nations Comtrade Database, from 2018 to 2022, annual exports of shelled Brazil nuts from Bolivia, Peru and Brazil averaged 34,064 MT (Figure 4). Shipments from these three countries accounted for 78% of the global trade in shelled Brazil nuts over this period; re-exporters such as the European Union and the United States accounted for the remaining 22%.

Figure 4.
Brazil Nut Exports by Country of Origin, Shelled, Metric Tons
Source: DESA/UNSD United Nations Comtrade Database.



Average exports of in-shell Brazil nuts from Bolivia, Peru and Brazil amounted to 8,374 MT between 2018 and 2022. During the same period, Brazil was the region's leading in-shell exporter, with shipments averaging 7,304 MT, or 71% of the world total (Figure 5).

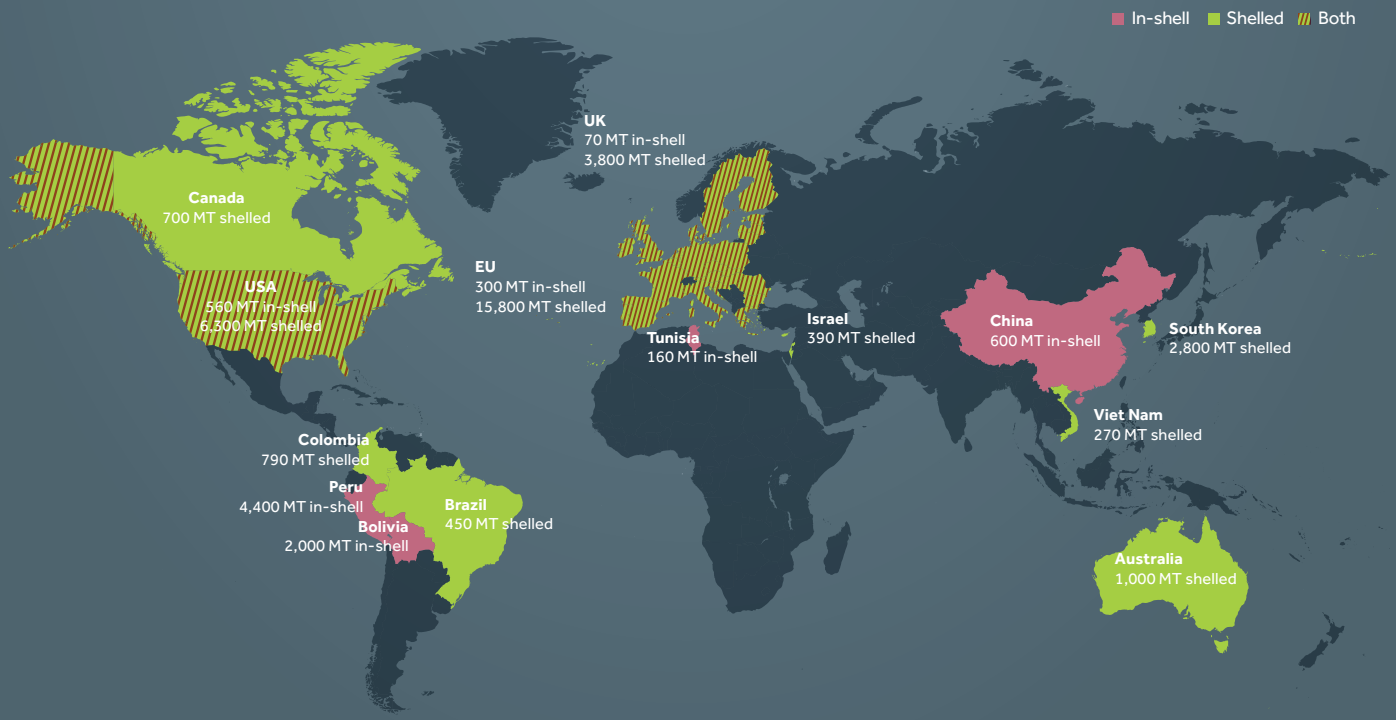
Figure 5.
Brazil Nut Exports by Country of Origin, In-shell, Metric Tons
Source: DESA/UNSD United Nations Comtrade Database.



Peru and Bolivia are the world's top importers of in-shell Brazil nuts, averaging 4,400 MT and 2,000 MT, respectively, between 2018 and 2022 (Figure 6). These imports, which originate in Brazil, are processed in Peru or Bolivia before being re-exported elsewhere as shelled product. China, the United States and the European Union round out the top five importers of in-shell Brazil nuts, averaging 600 MT, 560 MT and 300 MT, respectively, from 2018 to 2022.

The European Union is, by far, the top importer of shelled Brazil nuts, averaging 15,800 MT between 2018 and 2022. The second destination for shelled nuts over the same period was the United States with 6,300 MT, followed by the United Kingdom with 3,800 MT, South Korea with 2,800 MT and Australia with 1,000 MT.

Figure 6.
Top Destinations of Brazil Nuts from Bolivia, Peru and Brazil, Average 2018-2022, Metric Tons
Source: DESA/UNSD United Nations Comtrade Database.



Brazil Nuts: The Hidden Gems of the Amazon Rainforest

PROF. SALO COSLOVSKY

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Ad placed by the Brazil Nut Association in a US-based magazine. Photo: Salo Coslovsky.

Recipe book produced by the Brazil Nut Association. Photo: Salo Coslovsky.

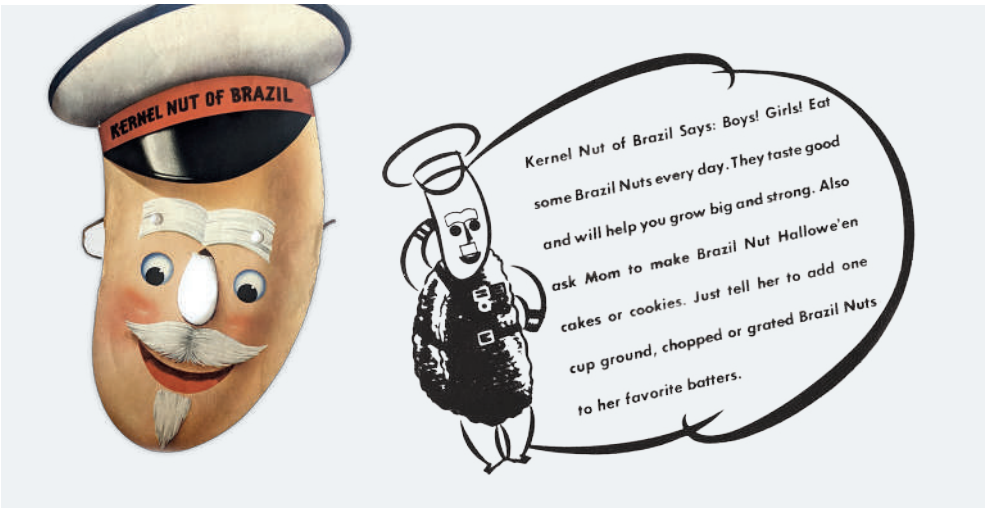
Brazil nuts are the most iconic of all forest-friendly products from the Amazon but their sustainability and fascinating backstory often go unnoticed by consumers. To ensure broader recognition and help this remarkable nut reach its full potential, it is essential to promote awareness and invest in marketing.

Business Insider, an online media company, publishes a captivating video series that examines "the real reasons why the world's priciest products are so expensive." Many of the products that it showcases are specialty foods, including saffron from Kashmir, nutmeg from India, huitlacoche from Mexico, truffles from Italy and cinnamon from Sri Lanka.

Each of these products is special, but they also share some features related to the way they are obtained. First of all, their production is labor-intensive and cannot be mechanized. Most of these foods are delicate or perishable. More importantly, they are strongly associated with a place and its terroir in a way that both restricts output and shields them from competition.

Brazil nuts have not been featured in any of those Business Insider videos yet, maybe because they are not all that expensive, but they are equally if not more extraordinary than any of the products mentioned above.

Every single Brazil nut kernel traded internationally is harvested from the wild in the Amazon, typically in remote locations, and often by members of indigenous groups or other forest-based communities that not only live in protected areas but actively defend them from illegal loggers and other threats. Many of these people spend weeks walking through narrow footpaths to go from tree to tree, collecting the fruits and extracting their edible seeds entirely by hand.



Paper mask from 1940 featuring "Kernel Nut of Brazil," the anthropomorphic character invented by the Brazil Nut Association to represent Brazil nuts. Photo: Salo Coslovsky.

The trees are marvels to behold. Tall and slender, many of them are older than celebrated European cathedrals, such as the Duomo in Milan or Notre-Dame in Paris. Some archaeologists believe that denser stands of old-growth Brazil nut trees were nurtured by members of ancient indigenous civilizations that deliberately shaped the vegetation that we see in the Amazon today. Crucially, the crop grows without pesticides, fertilizer, irrigation or any other human intervention. Rather, all the tree really needs is to be surrounded by the native forest, so its tightly-coiled flowers can be pollinated by large-bodied orchid bees.

These traits are not well known by the public in general. In most places, Brazil nuts are sold without any indication of their wild provenance and the tree's role as protector of the Amazon. Instead of being lauded for their sustainability, Brazil nuts have been shunned for containing compounds that could be dangerous to human health. In the United States, for example, consumers are cautioned about their selenium content and advised to limit consumption to a few kernels a day. Even if selenium is a crucial trace element, it can be hazardous if consumed in excess, so the advice seems reasonable. But is it based on solid evidence? A quick review of the medical literature surfaces no case of someone who fell ill after eating too many Brazil nuts. There are cases of people who got sick after taking too many selenium pills, and a few cases of individuals who fell ill after eating too many paradise nuts —but that's a different plant, with 500 times more selenium than its distant cousin. Further, many people eat foods rich in selenium without ill effects. One Pacific oyster, for example, contains 70% of the daily selenium intake recommended for an adult. Still, many people eat them by the dozen. It seems clear that more research is needed and findings must be disseminated more widely.

Producers and processors of other edible nuts have acquired the means to invest in research, advocacy and promotion. In the United States, for example, the Almond Board of California commands an annual budget of $80 million,[1] followed by the California Walnut Board and Commission with US$40 million,[2] while the American Pistachio Growers obtains close to US$17 million.[3]

But where is the Brazil Nut Association (BNA)? At one time, one did exist. The original BNA was created in 1934 by an alliance of food importers based in the East Coast of the United States. It was funded through a surcharge of US$4.00 per ton of Brazil nuts imported into that country (equivalent to about US$50.00 today) and the money was used to promote Brazil nuts among American consumers. Among other initiatives, the BNA printed recipe books, commissioned newspaper and TV ads, and provided retail displays. In 1935, for example, the BNA spent US$30,000 (equivalent to US$650,000 today) to distribute a booklet containing "recipes you have never tried" that incorporated Brazil nuts. After this release, requests for Brazil nuts reportedly "poured in," causing "practically the entire supply of Brazil nuts in the United States" to sell out. The BNA remained active for 30 years, but it stopped operating around 1965, likely due to a legal vulnerability dating back to its creation.

It is now time for Brazil nut enterprises around the world to once again promote their product in a forward-looking way. Such an organization could support a concerted effort to deepen our knowledge about the nutritional content of Brazil nuts and how this might vary depending on location. It could foster traceability so customers would know what they are buying. It could encourage forest-based communities to emulate their ancestors and plant Brazil nut seedlings as part of ongoing efforts to restore the Amazon. It could even suggest that Brazil nuts replace credits in the voluntary market for carbon, as each nut is incontestable evidence of continued forest preservation. Above all, it should convey the remarkable story of how Brazil nuts help protect the Amazon and the globe.

1. Almond Board of California, FY2018/19 BOD App'd Budget (Objective Est.) and FY 2017/18 Actual Financials. https://www.almonds.com/sites/default/files/FY18-19%20Annual%20Budget_0.pdf **2.** Executive Director and CEO, California Walnut Board & Commission. https://walnuts.org/wp-content/uploads/2022/03/CWB_CWC_PS.pdf **3.** American Pistachio Growers 2022 Annual Report. https://apgpower.americanpistachios.org/wp-content/uploads/2023/04/APG-2022-Annual-Report.pdf

Health Benefits of Brazil Nuts

Why eat Brazil nuts? (Besides their irresistible taste, of course!) For starters, they are high in vitamin E and selenium, which help to protect cells from oxidative stress. Brazil nuts are also high in magnesium, which helps to reduce fatigue, contributes to the maintenance of normal bones, and has been associated with lower blood pressure levels. They are also high in unsaturated fat, vitamin B1, potassium, zinc, phosphorus, copper and manganese, and are a source of calcium and iron.[1]

Science has shown that the nutritious Brazil nut offers a plethora of health benefits. In 2022, the journal *Foods* published a systematic review[2] of 24 clinical trials that analyzed the effects of regular Brazil nut consumption on health. The findings showed improvement in antioxidant status through increased selenium levels in all studies that looked at antioxidant status regardless of the health status of the participants. Moreover, healthy individuals saw improved lipid markers and fasting glucose. Individuals with obesity saw improvement in markers of lipid metabolism. Participants with type 2 diabetes also experienced improved oxidative stress. The study also found that older adults with mild cognitive impairment improved verbal fluency.

In short, the review found that Brazil nuts offer potential health benefits in a wide range of areas. Read on to learn more about some of the most striking scientific findings involving this tasty nut.

Obesity and Weight Management

A randomized controlled trial from 2011[3] investigated the effects of Brazil nut intake on antioxidant capacity, lipid and metabolic profiles and nutritive skin microcirculation in 17 obese adolescents. The study found that consumption of Brazil nuts improved participants' lipid profile and microvascular function, possibly due to the high level of unsaturated fatty acids and bioactive substances in the nuts.

More recently, a randomized controlled trial from 2022[4] assessed the effect of eating Brazil nuts as part of an energy-restricted diet on body weight, body composition, cardiometabolic markers and endothelial function in 40 women at cardiometabolic risk. The study found that participants who incorporated 15 g of Brazil nuts and 30 g of cashews into their diet each day had higher plasma selenium concentration, lower total body fat and improved lean mass percentage compared to the control group.

Cognitive Performance

A randomized controlled trial from 2016[5] assessed the cognitive effects of Brazil nut consumption compared to a control group avoiding nut consumption. Participants in the treatment group consumed one Brazil nut daily for six months. At the end of the study period, improvements in verbal fluency and constructional praxis were significantly greater in the supplemented group, suggesting that Brazil nut consumption can have positive effects on some cognitive functions in older adults with mild cognitive impairment.

Selenium Status

Brazil nuts are one of the richest known sources of selenium. In addition to protecting cells from oxidative stress, this nutrient is important for reproduction, thyroid gland function, DNA production, and protecting the body from damage caused by free radicals and from infection, according to the US National Institutes of Health. A robust body of evidence shows that regular consumption of small amounts of Brazil nuts —just one per day— is highly effective at improving selenium status.[7-10]

Brazil nuts

KEY FACTS

ANTIOXIDANTS
Brazil nuts are high in vitamin E and selenium, which help to protect cells from oxidative stress.

HIGH IN:
Vitamin E, selenium, magnesium, unsaturated fat, vitamin B1, potassium, zinc, phosphorus, copper and manganese

SOURCE OF:
Calcium and iron

References:
1. Regulation (EC) No. 1924/2006 of the European Parliament and of the Council of 20 December 2006. **2.** da Silva, A., et al. (2022). Effects of Regular Brazil Nut (*Bertholletia excelsa* H.B.K.) Consumption on Health: A Systematic Review of Clinical Trials. *Foods*, 11(18), 2925. **3.** Maranhão, P. A., et al. (2011). Brazil nuts intake improves lipid profile, oxidative stress and microvascular function in obese adolescents: a randomized controlled trial. *Nutr Metab (Lond)*, 8(1), 32. **4.** Caldas, A., et al. (2022). Brazil and cashew nuts intake improve body composition and endothelial health in women at cardiometabolic risk (Brazilian Nuts Study): A randomized controlled trial. *Br J Nutr*, 1–38. **5.** Rita Cardoso, B., et al. (2016). Effects of Brazil nut consumption on selenium status and cognitive performance in older adults with mild cognitive impairment: a randomized controlled pilot trial. *Eur J Nutr*, 55(1), 107–116. **6.** National Institutes of Health, Office of Dietary Supplements. *Selenium Fact Sheet for Consumers*. Accessed November 27, 2023. https://ods.od.nih.gov/factsheets/Selenium-Consumer/ **7.** Cominetti, C., et al. (2012). Brazilian nut consumption improves selenium status and glutathione peroxidase activity and reduces atherogenic risk in obese women. *Nutr Res*, 32(6), 403–407. **8.** Cominetti, C., et al. (2011). Associations between glutathione peroxidase-1 Pro198Leu polymorphism, selenium status, and DNA damage levels in obese women after consumption of Brazil nuts. *Nutrition*, 27(9), 891–896. **9.** Stockler-Pinto, M. B., et al. (2012). Effect of Brazil nut supplementation on plasma levels of selenium in hemodialysis patients: 12 months of follow-up. *J Ren Nutr*, 22(4), 434–439. **10.** Rita Cardoso, B., et l. (2016). Effects of Brazil nut consumption on selenium status and cognitive performance in older adults with mild cognitive impairment: a randomized controlled pilot trial. *Eur J Nutr*, 55(1), 107–116.

Eggplant and Brazil Nut Crumble

Servings: 5

Eggplant ingredients:

- 2 eggplants
- 100 ml olive oil
- 1 tsp sea salt

Sauce ingredients:

- 250 g Greek yogurt
- ½ tsp sea salt
- 1 tsp ground garlic
- 1 tsp ground cumin
- ½ tsp ground cinnamon
- 1 tbsp dijon mustard
- ¼ tsp ground pepper
- 4 tbsp olive oil
- 50 ml water

Crumble ingredients:

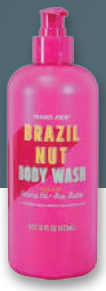
- 40 g rice flour
- 70 g oat flakes
- 70 g coarsely chopped Brazil nuts
- 4 tbsp ground flaxseed
- 1 minced garlic clove
- 60 ml water
- 50 g softened coconut oil
- 1 tsp sea salt

Preparation:

1. Preheat the oven to 200°C.
2. Cut the eggplant into cubes and put them in a baking dish.
3. Sprinkle with oil and salt. Mix well with your hands.
4. Roast in the oven for 20-30 minutes.
5. Meanwhile, in a small bowl, mix the Greek yogurt, garlic, cumin, cinnamon, dijon mustard, pepper and salt.
6. In another medium bowl, mix the crumble ingredients and work with your hands until you get the texture of moist earth.
7. Once the eggplant is ready, remove from the oven and mix with the yogurt sauce.
8. Scatter the crumble over the top and then return to the oven for around 30 minutes until the top is golden and the filling is bubbling.
9. Once ready, serve immediately.

New Product Launches

Brazil nuts, known for their distinctive flavor and texture, are cropping up everywhere. Beyond culinary use, these versatile nuts have found a place in cosmetics, showcasing their diverse applications. Consumers across the globe are incorporating these majestic nuts into their diets and beauty routines. Read on to discover some of the latest products containing Brazil nuts to hit the market.



Trader Joe's Brazil Nut Body Wash

USA

Following in the footsteps of the supermarket chain's popular Brazil Nut Body Butter and Body Scrub, this new body wash nourishes the skin with *Bertholletia excelsa* seed oil.

https://www.traderjoes.com/home/products/pdp/brazil-nut-body-wash-076047

Pi'y Brazil Nuts

UK

A new direct trade relationship brings these wild-harvested nuts directly from the Kayapó people of Brazil to the UK for the first time.

https://hodmedods.co.uk/products/piy-brazil-nuts

Mac Nut Kiki Milk

USA

This decadent, delicious, creamy drink is made from a nourishing blend of organic Brazil nuts, macadamia nuts and cashews.

https://www.kikimilk.com/products/mac-nut-kiki-milk-32-fl-oz-pack-of-6

Quret Beauty Recipe Nourishing Brazil Nut Mask

South Korea

Pamper your skin every day with this nourishing face mask made from natural ingredients, with no animal ingredients and no animal testing.

https://m.quret.co.kr/product/detail.html?product_no=35&cate_no=42&display_group=1

Sol de Janeiro Brazilian Bum Bum Cream

USA

With guaraná, cupuaçu butter, coconut oil, açaí oil and, of course, Brazil nuts, this body cream taps into the natural goodness of the Amazon rainforest.

https://soldejaneiro.com/products/brazilian-bum-bum-cream

GoodSAM Raw & Unsalted Organic Brazil Nuts

USA

These Brazil nuts come from the Bolivian rainforest and provide a sustainable income for the communities collecting the nuts.

https://goodsamfoods.com/products/organic-brazil-nuts-raw-and-unsalted

Nuts Over Meat: A Scientific Symphony of Substitution for Cardiometabolic Wellness and Lower All-Cause Mortality Risk

Prof. Jordi Salas-Salvadó

PROF. JORDI SALAS-SALVADÓ
IN COLLABORATION WITH PHD STUDENT JIAQI NI

Rovira i Virgili University; Department of Biochemistry and Biotechnology; Food, Nutrition, Development and Mental Health (ANUT-DSM); Human Nutrition Unit; Reus, Spain. Pere Virgili Institute for Health Research (IISPV); Reus, Spain. Physiopathology of Obesity and Nutrition Networking Biomedical Research Centre (CIBEROBN); Institute of Health Carlos III; Madrid (Spain).

A shift in diet from high consumption of animal-based foods, especially red and processed meat, to plant-based foods (e.g., nuts, legumes and whole grains) is associated with a lower risk of all-cause mortality, cardiovascular diseases and type 2 diabetes.

In a world grappling with environmental challenges and escalating health concerns, our dietary habits and choices have taken center stage.[1,2] The ecological impact of mass animal product consumption is undeniable —deforestation, greenhouse gas emissions, resource depletion and loss of biodiversity.[1,2] Furthermore, rising instances of non-communicable diseases such as cardiovascular diseases (CVD) and type 2 diabetes (T2D) are closely linked to dietary habits, especially the consumption of red and processed meats.[3,4] This catastrophic symphony compels us to scrutinize the impact of the food system and our dietary choices on both planetary and human health. Thus, opting for plant-based foods, such as nuts, legumes and whole grains, emerges as a sustainable choice, aligning personal health with environmental responsibility.

The Practical Impact of Substitution With Nuts in the Spotlight

Delving into the science of substitution, compelling evidence supports replacing animal-based food with plant-based alternatives, highlighting the efficacy of this dietary shift with emphasis on nut consumption in significantly reducing the risk of CVD, T2D and all-cause mortality.[3,4]

Specifically, recent systematic reviews and meta-analyses demonstrated that substituting red and processed meat with nuts, legumes and whole grains is associated with a noteworthy reduction in the risk of total CVD, coronary heart disease (CHD), T2D and all-cause mortality, backed by moderate certainty of evidence.[3,4] Similarly, replacing eggs with nuts is associated with a lower incidence of total CVD and all-cause mortality.[4] Substitution of butter with olive oil exhibited

a moderate certainty of evidence in reducing the incidence of total CVD, CVD mortality, total T2D (incidence and mortality combined) and all-cause mortality.[4] Furthermore, the replacement of dairy products with nuts and legumes was linked to a lower risk of all-cause mortality.[4] While some associations showed low certainty of evidence, findings suggested an inverse relationship between poultry substitution with nuts or legumes and T2D incidence.[4] Another systematic review and meta-analysis underscored the risk reduction associated with replacing red meat, particularly processed red meat, with alternative protein sources (e.g., fish/seafood, poultry, dairy, eggs, nuts, legumes).[3] Nuts consistently emerged as a favorable replacement, demonstrating lower risks of CHD and all-cause mortality compared to other protein sources.[3] The evidence suggests that not only the quantity but also the type of foods replaced matters.

These insights collectively advocate for a dietary shift towards plant-based food choices, particularly emphasizing nuts as a potential strategic substitution move for enhanced cardiometabolic health and lower all-cause mortality risk.

Mechanisms of Harmony

Beyond the shift itself, understanding the nutritional dynamics at play is crucial. Red and processed meat are characterized by high contents of saturated fats (such as stearic and palmitic acid), heme iron, and compounds like sodium, nitrates and nitrites. These components contribute to oxidative stress, chronic inflammation and insulin resistance, which might be associated with increased health risks linked to CVD, T2D and mortality.[3,4] In contrast, plant-based foods such as nuts, legumes, whole grains and olive oil offer a contrasting profile. They contain significantly less saturated fats and more monounsaturated and polyunsaturated fats compared to red and processed meat. They are also characterized by high amounts of antioxidant and anti-inflammatory compounds, including fiber, phytochemicals, vitamins and minerals, and polyphenols, fostering cardiovascular health and mitigating risks associated with obesity.[1,2,5,6] Thus, substituting animal-based foods, especially red and processed meat, with plant-based foods simultaneously reduces risk factors and contributes to observed beneficial associations regarding cardiometabolic health. Notably, replacing red meat with a high-quality plant protein source, such as nuts, leads to favorable changes in lipid profiles without adverse effects on body weight,[7] blood pressure[8] and glycemic control.[9]

In summary, the evidence suggests that adopting a dietary pattern characterized by reduced consumption of animal-based food, especially red and processed meat, accompanied by the increased consumption of plant-based foods such as nuts, legumes and whole grains, is associated with a diminished risk of all-cause mortality, CVD, CHD and T2D, therefore reducing the personal and healthcare costs for society. This dietary shift not only holds promise for individual health but also aligns with the broader goal of promoting planetary health for future generations. Nevertheless, further research is essential to reinforce existing evidence, explore potential replacement products, and advance our understanding of the intricate interplay between dietary habits and health outcomes, paving the way for refined dietary recommendations that cater to both individual well-being and planetary sustainability.

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New Scientific Studies

INC-Funded Study Finds Longer-Term Nut Consumption Improves Brain Insulin Sensitivity

Nijssen, K. M., Mensink, R. P., Plat, J., Ivanov, D., Preissl, H., & Joris, P. J. (2023).

Mixed nut consumption improves brain insulin sensitivity: a randomized, single-blinded, controlled, crossover trial in older adults with overweight or obesity.

The American Journal of Clinical Nutrition, S0002-9165(23)66340-3.

This INC-funded study, published in the prestigious *American Journal of Clinical Nutrition*, one of the highest-rated journals in the field of nutrition and dietetics, showed that longer-term consumption of mixed nuts significantly improved brain insulin sensitivity in older adults with overweight or obesity. This may be important for preventing age-related metabolic and cognitive diseases.

The trial consisted of 28 healthy men and women aged 60–70 years. The researchers conducted a randomized, single-blinded, crossover study involving a 16-week intervention and control period, separated by an 8-week washout period. The intervention consisted of 60 g per day of mixed nuts (15 g each of walnuts, pistachios, cashews and hazelnuts).

Nut consumption significantly improved insulin action in brain regions involved in the modulation of metabolic and cognitive processes. Peripheral insulin sensitivity was not affected. However, intrahepatic lipid content, serum LDL ("bad") cholesterol and systolic blood pressure were lower following nut consumption compared to the control period. Participants did not gain weight during the study.

Replacing Processed Meat With Nuts May Reduce Cardiovascular Disease Risk by 27%

Neuenschwander, M., Stadelmaier, J., Eble, J., Grummich, K., Szczerba, E., Kiesswetter, E., Schlesinger, S., & Schwingshackl, L. (2023).

Substitution of animal-based with plant-based foods on cardiometabolic health and all-cause mortality: a systematic review and meta-analysis of prospective studies.

BMC Medicine, 21(1), 404.

This systematic review and meta-analysis evaluated the evidence for associations between replacing animal-based foods with plant-based foods and cardiometabolic health and all-cause mortality.

The study included 37 prospective cohort studies conducted in the United States, Europe and Asia. Replacing 50 grams/day of processed meat with 28-50 grams/day of nuts was associated with a 27% reduction in the risk of cardiovascular disease. Replacing 50 grams/day of red or processed meat with 10-28 grams/day of nuts was associated with an 8% and 22% lower risk, respectively, of type 2 diabetes incidence. Moreover, replacing 50 grams/day of red meat with 10-50 grams/day of nuts was associated with a 7% lower risk of all-cause mortality, while replacing 50 grams/day of processed meat with 28-50 grams/day of nuts reduced all-cause mortality by 21%.

These findings suggest that a dietary shift away from animal-based foods and towards nuts would have an important impact on cardiometabolic health.

Regular Nut Consumption Could Increase Male Fertility

Cardoso, B. R., Fratezzi, I., & Kellow, N. J. (2024).

Nut Consumption and Fertility: a Systematic Review and Meta-Analysis.

Advances in Nutrition (Bethesda, Md.), 15(1), 100153.

This systematic review and meta-analysis set out to present up-to-date evidence regarding the association between nut intake and fertility outcomes.

The researchers searched the Ovid MEDLINE, Embase, CINAHL and Scopus databases from inception to June 2023. Eligible articles were interventional or observational studies in human subjects of reproductive age (18-49 years) that assessed the effects of nut consumption on fertility-related outcomes for a minimum of three months. Four studies involving 875 participants were included in the review.

Meta-analysis of two randomized controlled trials involving 223 healthy men indicated that consumption of at least 60 grams/day of nuts increased sperm motility, vitality and morphology in comparison to controls. The findings show that including at least two servings of nuts daily as part of a Western-style diet improves sperm parameters, which are predictors of male fertility.

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Photo: Jodie Johnston

JODIE JOHNSTON

CATEGORY TECHNICAL MANAGER – FOOD ON THE MOVE, PREPARED PRODUCE, CAFÉ & HOSPITALITY
MARKS & SPENCER
LONDON, UK

Jodie Johnston leads technical teams to implement and deliver market-leading innovation to ensure that food safety standards and best practices are met across store operations and with global supplier partners small and large. She has worked within many areas in both manufacturing and retailing, including fresh, ambient and quick service restaurants. Her extensive experience in the manufacturing industry includes setting up new factories from scratch, working for major global/UK brands, and leading technical and new product development teams for Tesco across the UK, Europe and Japan to support a sushi project. She is passionate about the food industry and engaging with schools and universities to support future talent. A massive coffee lover, she set up a coffee tasting experience from farm to cup in Guatemala.

Let's start with the big picture. In your view, what are the big consumer trends of the moment?

The biggest consumer trend at the moment is health, in particular high protein and gut health.

And what does this mean for nuts and dried fruits?

It's a great time for the nut industry, as nuts are such an important part of the diet and trends going forward. Nuts provide important nutrients, including fibre, plant protein and vitamins and minerals. People who eat more nuts tend to have a lower risk of heart disease, cancer and death from all causes. Although nuts have high fat and therefore calorie content, the majority of this is the "good" fat: unsaturated fat. There is some evidence to suggest that the physical structure of nuts — that is, the food matrix— means that our bodies can't actually extract all of the energy (calories) that they contain when we eat them.

Unfortunately, consumption in the UK is currently low. Nut spreads have increased in popularity, with new varieties such as cashew and almond spreads offering us more choices. Nuts are also handy for snacking and make a tasty addition to stir-fries, curries, stews, pasta dishes, salads, breakfast cereals, porridge and yogurt.

Nuts and dried fruits are key to maintaining our health strategy through our "Eat Well" brand, where customers follow the flower to select the healthier options within our foodhall. This area also supports our compliance with the UK's new HFSS legislation. Under these rules, any product which is considered to nutritionally be too high in fat, salt or sugar cannot be stored at the front of stores or at till points. This, in turn, is giving the dried fruit and nut industry more merchandising opportunities in these store locations, which is increasing the customer base and sales of these products.

In terms of product development, how is Marks & Spencer responding to key consumer trends?

At M&S, we are all about innovation and creating trends, such as our high-protein and gut health ranges, as well as our collaboration with the nutrition science company ZOE, which led to the launch of the M&S Food x ZOE Gut Shot. We also take a lot of pride in our dried fruit and nut category, which features market-leading quality, innovation and depth of range.

What are some of the main challenges you are currently facing in the supply chain, and what is Marks & Spencer doing to address these issues?

The main challenge within the dried fruit and nut industry would be around traceability, in particular being able to complete traceability within the supply chains back to the grower for each nut commodity. M&S are addressing this through understanding the risks presented at each stage of the supply chain from both a food safety and a responsible sourcing perspective. Where challenges present themselves, the dried fruit and nut industry needs to drive and improve this and implement mitigation measures to ensure that supply chains are as safe as possible for both the product and the people working in the industry.

Food safety is always a top concern. How do you ensure that the food products sold by Marks & Spencer are safe and high-quality?

At Marks & Spencer, we are committed to ensuring that our products are safe, legal and produced in line with our brand integrity and quality standards. Our wonderful supplier partners from which we source our products are responsible for delivery against their legal obligations, in addition to our food safety, quality and integrity requirements. Our Food Technology team are then accountable for working alongside our supply base in achieving the requirements for food safety, high quality and technical innovation that we are famous for. We have a robust set of monitoring procedures in place to ensure that risk is effectively managed and mitigated where appropriate, including independent auditing, a robust product testing program and regular visits to our supplier partners.

How does Marks & Spencer view the issue of sustainability and what efforts are you making in this area?

Sustainability is part of how we do business at M&S —it's in our DNA. From the beginning, M&S has built trust by doing the right thing by our people and the communities we serve, and this remains one of the core values we live by today.

The unique relationship of trust between M&S and its customers runs much deeper than our community impact —it runs right through our entire value chain. You will hear us talk about protecting the magic of M&S, and that magic is summed up in the trusted value promise we make to our customers.

Our founders knew that value means much more than price; it means giving customers assurance that raw materials are sourced responsibly to protect the planet for tomorrow, providing confidence that the people who make and sell our products are treated fairly. It also means setting the standards that others follow, whether in terms of animal welfare or product traceability.

Equally, there is a new EU Corporate Sustainability Due Diligence Directive, which will apply to all EU companies and parent companies. It aims to enhance the protection of the environment and human rights within the EU and globally, so I would recommend it as a topic of discussion at future INC meetings to understand how the dried fruit and nut industry will comply. In addition to this, at M&S we are also updating our nut sourcing policy for publication to our suppliers this year.

Join us in Vancouver for the nut and dried fruit industry's most exclusive event!

INC international Nut&DriedFruit

Photo: Destination BC/Grant Harder

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INC XLI WORLD NUT AND DRIED FRUIT CONGRESS

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Three Days of Industry Insights

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PRELIMINARY PROGRAM

Monday, May 6

12:00 pm - 5:00 pm
CONGRESS REGISTRATION

Tuesday, May 7

8:00 am - 6:00 pm
CONGRESS REGISTRATION

7:00 am - 2:00 pm
GOLF & TENNIS DAY

Wednesday, May 8	Thursday, May 9	Friday, May 10
8:00 am – 5:30 pm CONGRESS REGISTRATION	8:00 am – 5:30 pm CONGRESS REGISTRATION	8:00 am – 2:00 pm CONGRESS REGISTRATION
8:30 am - 5:30 pm Nutfruit Plaza ALL-DAY COFFEE EXHIBITION BOOTHS		
Nutfruit Plaza MEETING AREA *Sponsored by Al Jameel International*		
8:30 am - 9:00 am NETWORKING BREAKFAST *Sponsored by Almond Board of California*	8:30 am - 9:00 am NETWORKING BREAKFAST *Sponsored by MSC Mediterranean Shipping Company*	8:30 am - 9:00 am NETWORKING BREAKFAST *Sponsored by Touchstone Pistachio Co.*
9:00 am - 9:45 am CONGRESS OPENING INDUSTRY AND CONSUMER TRENDS PRESENTATION Goretti Guasch, INC Executive Director	9:00 am - 9:45 am WALNUTS ROUND TABLE	9:00 am - 9:45 am HAZELNUTS ROUND TABLE
9:45 am - 10:30 am KEYNOTE SPEAKER Marc Low: "This Changes *Everything*: AI, the New Paradigm and Where to From Here"	9:45 am - 10:30 am KEYNOTE SPEAKER Prof. Janice Gross Stein: "A World Disordered"	9:45 am - 10:30 am SUSTAINABILITY SEMINAR Chaired by Pino Calcagni, INC Sustainability, Scientific and Government Affairs Committee Julie Adams, Almond Board of California Miriam Gautier, Bösch Boden Spies Dr. Miriam Villen King, Stahmann Webster
10:30 am - 11:15 am COFFEE BREAK *Sponsored by Almond Board of California*	10:30 am - 11:15 am COFFEE BREAK *Sponsored by MSC Mediterranean Shipping Company*	10:30 am - 11:15 am COFFEE BREAK *Sponsored by Touchstone Pistachio Co.*
11:15 am - 12:00 pm ALMONDS ROUND TABLE	11:15 am - 12:00 pm CASHEWS ROUND TABLE	11:15 am - 12:00 pm PEANUTS AND PECANS ROUND TABLE
12:00 pm - 12:45 pm PISTACHIOS ROUND TABLE	12:00 pm - 12:45 pm RAISINS, PRUNES AND CRANBERRIES ROUND TABLE	12:00 pm - 12:45 pm DATES, APRICOTS AND FIGS ROUND TABLE
12:45 pm - 1:30 pm NUTRITION RESEARCH SEMINAR Chaired by Prof. Jordi Salas Salvadó, INC World Forum for Nutrition Research and Dissemination Dr. John L. Sievenpiper, University of Toronto Dr. Kristina Petersen, Penn State University	12:45 pm - 1:30 pm BRAZIL NUTS AND PINE NUTS ROUND TABLE	12:45 pm - 1:30 pm MACADAMIAS ROUND TABLE
1:30 pm – 3:00 pm WORKING BUFFET LUNCH *Sponsored by Setton Pistachios of Terra Bella*	1:30 pm – 3:00 pm WORKING BUFFET LUNCH *Sponsored by Royal Nuts*	1:30 pm – 3:00 pm WORKING BUFFET LUNCH *Sponsored by Qiaqia Food Co. Ltd*
3:00 pm – 3:30 pm SPONSORED PANEL SESSION *Sponsored by Prosper Cashew*	3:00 pm – 5:00 pm SPONSORED PANEL SESSIONS	
3:30 pm – 4:00 pm SPONSORED PANEL SESSION *Sponsored by Unitec*		
6:00 pm - 8:00 pm The Atrium at the Pan Pacific Hotel WELCOME COCKTAIL *Sponsored by Transworld Shipping Inc*	7:00 pm - 10:00 pm (Buses depart at 6:30 pm) BC Place Stadium CASUAL BUFFET DINNER *Sponsored by Wonderful Pistachios & Almonds*	6:30 pm - 11:00 pm Vancouver Convention Centre Ballroom COCKTAIL, GALA DINNER AND BALL *Sponsored by Chilenut*

Keynote Speakers

MARC LOW

Director, Innovation & Emerging Technology
KPMG Canada

Marc is a change agent, techno-optimist, mentor and investor. His work is focused on helping organizations design strategies to seize the opportunity of a rapidly evolving future. His experience spans tech growth companies, multinational consultancies and his own startups, giving him a unique perspective on digital innovation and what is needed to make it "stick" inside organizations. His focus on user-centered design principles informs the strategies that help clients leverage exponential trends like digital twins, blockchain, generative AI and the rapidly evolving "future of work" —and turn nouns into value. He has the privilege of calling beautiful Vancouver, Canada, home.

Keynote Talk

"This Changes *Everything*: AI, the New Paradigm and Where to From Here"
AI is no longer an abstract futuristic concept, it's our present reality. This presentation explores the transformative impact of AI on business and society, exploring why technological disruption can be difficult to see and what comes next once a new paradigm takes hold. We'll explore real-life applications and challenges and share practical advice to help leaders thrive in the paradigm shift that is our AI era.

PROF. JANICE GROSS STEIN

Belzberg Professor of Conflict Management
Founding Director, Munk School of Global Affairs and Public Policy
University of Toronto, Canada

Janice Gross Stein is the Belzberg Professor of Conflict Management and the Founding Director of the Munk School of Global Affairs and Public Policy at the University of Toronto. She is a member of the Order of Canada and the Order of Ontario and a frequent guest on the CBC and the BBC. She has a widely listened-to podcast, *Friday Focus*, that appears every Friday and is a regular contributor to *The Bridge*, hosted by Peter Mansbridge. Most recently, she co-Chaired the National Advisory Committee on Canada's Indo-Pacific Strategy for Canada's Foreign Minister.

Keynote Talk

"A World Disordered"
All around us, we see a world cracking, polarizing and ripped apart by violent conflict. How did we get here and how can we contain the damage? And how does Canada —and Canadians— find a voice in a world that is reorganizing into unfamiliar patterns?

Nutrition Research Seminar Guest Speakers

DR. JOHN L. SIEVENPIPER

Professor, Departments of Nutritional Sciences and Medicine
University of Toronto, Canada

Dr. John L. Sievenpiper is a Clinician Scientist who holds appointments as a Professor at the University of Toronto and Staff Physician and Scientist at St. Michael's Hospital. He has established an internationally recognized research program focused on using randomized controlled trials and epidemiological approaches to address questions of clinical and public health importance in relation to diet and cardiometabolic disease prevention. He is directly involved in clinical practice guidelines development for obesity, diabetes and cardiovascular disease with appointments to expert committees in Canada and Europe. He has authored more than 270 papers.

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DR. KRISTINA PETERSEN

Associate Professor
Professor in Charge, Graduate Program in Nutritional Sciences
Department of Nutritional Sciences
Penn State University, USA

Dr. Kristina Petersen is an Associate Professor in the Department of Nutritional Sciences at the Pennsylvania State University. She is the Director of the Diet and Cardiometabolic Health Lab, which studies dietary interventions to delay and prevent the onset of cardiometabolic diseases. The lab conducts human clinical trials to examine the effect of individual foods, bioactives and dietary patterns on risk factors for cardiometabolic diseases. The lab also focuses on strategies to improve diet quality. Dr. Petersen has been a principal investigator or co-investigator on several studies examining the effect of tree nuts and peanut on risk factors for cardiovascular disease and type 2 diabetes.

INC Awards

Award for Excellence in Research

PROF. CESARETTIN ALASALVAR

Senior Chief Researcher at TÜBİTAK Marmara Research Center, Türkiye

Prof. Cesarettin Alasalvar's research focuses mainly on the development and health benefits of functional foods and nutraceuticals. He has been active in the Institute of Food Technologists (IFT) for many years and has served as a past chair of its Nutraceuticals and Functional Foods Division. He has also served as a past president of the International Society for Nutraceuticals and Functional Foods (ISNFF). He has successfully developed and transferred more than 10 innovative products to the food and pharmaceutical industries in the field of functional foods and nutraceuticals. He has also been very active in the Horizon 2020 and Horizon Europe programs.

He is the author of over 110 peer-reviewed research articles and book chapters. He is also the editor of eight international books and holds eight patents. He serves as the senior editor of the journal *Food Chemistry* and associate editor of the *Journal of Food Bioactives*. He has successfully coordinated two EU-funded projects and is the principal founder of the Food Innovation Platform of Türkiye (TÜGİP). Prof. Alasalvar has received numerous awards from scientific societies. He was featured (years 2000-2023) on Stanford University's list of the world's top 2% most influential scientists.

Award for Excellence in Gastronomy

Photo credit: Janis Nicolay

CHEF ANDREA CARLSON

Chef/owner of Burdock & Co, Harvest Community Foods and Bar Gobo

For over a decade, Chef Andrea Carlson has left a resounding legacy on Vancouver's dining scene. Her commitment to homegrown ingredients and active support of local food systems has led to strong relationships forged with farmers and growers, including previously unknown producers who have now caught the attention of chefs citywide.

Born and trained in British Columbia, Andrea studied organic farming and landscape design before making her mark on some of the best restaurants in Vancouver. The close connection between food and nature is a foundation of Andrea's culinary philosophy, and she has become a driving force behind the city's locavore movement.

As a Michelin-starred chef/owner at Burdock & Co, Harvest Community Foods and Bar Gobo, Andrea's love for the land surfaces in organic, seasonal plates influenced by British Columbia's diverse environments. Her signature style of cooking —delicate, earthy and vibrant— captures the essence of farm-to-table dining and is a tangible reminder of her lasting impact and leadership within the culinary community.

Sustainability Seminar Guest Speakers

VANCOUVER
INC XLI WORLD NUT AND DRIED FRUIT CONGRESS

JULIE ADAMS

Vice President, Global Technical & Regulatory Affairs
Almond Board of California, USA
Chair of the International Government and Regulatory Affairs Working Group, INC Sustainability, Scientific and Government Affairs Committee

Julie Adams joined the Almond Board of California in 2000. Her responsibilities include developing strategies to address international trade policy and technical issues including food safety, market access, phytosanitary requirements, regulatory changes and other areas that impact worldwide shipments of California almonds. Most recently, she has been coordinating consultations with US and European authorities related to almond import controls and pre-export programs, as well as developing a sustainability supply chain initiative. She chairs the Nut Processors Working Group of the European Snacks Association and is a member of the US Agricultural Technical Advisory Committee for Trade in Fruits & Vegetables.

MIRIAM GAUTIER

Managing Director
Bösch Boden Spies, Germany
Chair of the Sustainability Working Group, INC Sustainability, Scientific and Government Affairs Committee

Miriam Gautier is Managing Director at Bösch Boden Spies, a modern B2B food supplier and sustainable family business established 111 years ago. She holds a university degree in Business Administration with a focus on international trade. With over 20 years of international B2B sales experience across diverse industries, her passion for intercultural relationships stems from her upbringing on a South African wine farm, studies in Italy and work in France and Germany for international companies. Since May 2023, Miriam has been an INC ambassador for Germany. Collaborating internationally on improving sustainable business practices is a matter dear to her heart.

DR. MIRIAM VILLEN KING

Chief Scientist
Stahmann Webster, Australia
Chair of the Scientific Working Group, INC Sustainability, Scientific and Government Affairs Committee

Originally from Spain's picturesque Canary Islands, Dr. Miriam Villen King embarked on her Australian journey in 2011 following the completion of her degree in chemical engineering. Her path unexpectedly led her to agriculture, igniting her true passion. Starting humbly as a stickpicker at a pecan farm, Miriam developed a profound love for the trees and fieldwork. Seeking further growth, she interned at the pecan processing factory in Toowoomba before pursuing a master's degree and eventually a PhD in agricultural engineering while employed at the same farm. Her research focuses on enhancing the sustainability of tree nuts.

Evening Social Events

The INC Congress social events provide the perfect way to let loose and network with key players in the global nut and dried fruit industry, all in a relaxed atmosphere.

Photo: Pan Pacific Hotel.

WELCOME COCKTAIL

May 8, 2024
The Atrium at the Pan Pacific Hotel

The social program kicks off with our customary Welcome Cocktail in the Atrium at the Pan Pacific Hotel, a sophisticated venue overlooking the harbor and offering breathtaking vistas of the mountains. For an even better look at the stunning landscape, delegates are welcome to step out onto the outdoor terrace. Delectable canapés showcasing the finest local seafood, as well as scrumptious nuts and dried fruits, will be served to the tune of jazz classics.

Sponsored by Transworld Shipping Inc.

Photo: Vancouver Convention Centre

CASUAL BUFFET DINNER

May 9, 2024
BC Place Stadium

Nothing matches the electrifying energy of BC Place, an iconic venue that is set to host multiple matches during the 2026 FIFA World Cup. Our Casual Dinner will capture the essence of a real tailgate party on the BC Lions' home turf. Out on the field, joined by mascots, dance troupes and a marching band, we will enjoy an up-close view of a friendly game of Canadian football. Dinner will feature Canadian street food and a stadium-style bar offering a range of thirst-quenching options, including the most Canadian of cocktails: the Caesar.

Sponsored by Wonderful Pistachios & Almonds

COCKTAIL, GALA DINNER & BALL

May 10, 2024
Vancouver Convention Centre Ballroom

This evening of delicious food, fine wine and music is the nut and dried fruit industry's most elegant event. After chatting over drinks during cocktail hour, we will sit down for a formal dinner in the Vancouver Convention Centre Ballroom. As ever, delegates will bid farewell to the INC Congress with an unforgettable night of music and dancing.

Sponsored by Chilenut

Activities and Tours

VANCOUVER
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Photo: Furry Creek Golf & Country Club

GOLF & TENNIS

May 7, 2024

Warm up for a fruitful INC Congress with a day of outdoor fun in the company of industry peers! This year's Golf Day will take place on May 7, the day before the INC Congress begins, at the iconic Furry Creek Golf and Country Club, known as British Columbia's most scenic golf course. Nestled on the slopes of the Coast Mountains, the course features 18 holes and measures 6,641 yards from the back tees.

For the tennis aces among you, Tennis Day is a must-attend occasion. Set against the backdrop of the city's most iconic location, the Stanley Park Tennis Courts provide a picturesque setting, ensuring an unforgettable experience. Matches will be followed by lunch at the Stanley Park Brewpub & Restaurant.

TOURS FOR ACCOMPANYING PERSONS

May 9, 2024

Capilano Suspension Bridge & Granville Island Foodie Tour

The tour starts with a journey across the iconic Lions Gate Bridge, a suspension bridge originally built by the Guinness family famed for its Irish stout. This will be followed by a guided tour to the Capilano Suspension Bridge, a 140-meter-long footbridge crossing the Capilano River in the District of North Vancouver. We will discover the rainforest canopy with Treetops Adventure and experience an adrenaline-pumping walk above the canyon with Cliffwalk. Our last stop will be a foodie tour of Granville Island. A hotspot for chefs and food lovers of all stripes, the Granville Island Public Market features a dazzling array of top-notch bakeries, butcheries, produce stands, cheese shops and other goodies. This little oasis in the middle of Vancouver is a must-visit for anyone with a taste for Canada's local delights!

Photos: Capilano Suspension Bridge, Destination Vancouver/Nelson Mouellic.

Photos: Sama Jim Canzian/Bill Reid Gallery, Destination Vancouver/Kazutoshi Yoshimura.

May 10, 2024

Vancouver Art Gallery, Bill Reid Gallery & Stanley Park

Experience the vibrant cultural tapestry of Vancouver on a tour that blends art and nature. Participants will visit the Vancouver Art Gallery, recognized as one of North America's most innovative visual arts institutions and featuring historical and contemporary art from British Columbia and around the world. At the Bill Reid Gallery, a unique destination that celebrates the extraordinary diversity of contemporary Indigenous Northwest Coast Art, participants will immerse themselves in a vibrant cultural experience. Following the gallery visits, we will swing by Stanley Park to visit the famous totem poles and Prospect Point. The tour will end with a group lunch at the Teahouse in Stanley Park, which offers enchanting views of English Bay and the North Shore Mountains.

Places are limited, so sign up now to secure your spot!

On-site Technical Visit

VANCOUVER
INC XLI WORLD NUT AND DRIED FRUIT CONGRESS

May 2-5, 2024

All INC Congress attendees are welcome to register for the 2024 INC On-site Technical Visit. Enhance your congress experience by signing up for the industry's best hands-on learning experience!

The 2024 INC On-site Technical Visit offers a unique opportunity to get to know California's Central Valley. By visiting orchards, processing plants and more, we will get an up-close look at this world-famous producing region.

Confirmed visits include Wonderful Pistachios, Sun-Maid Growers of California, The Hulling Company, Qcify, Almond Board of California's Salida Almond Variety Trial, Diamond Foods, Pomona Farming, the California Walnut Commission & Board and TOMRA. As usual, the program will also feature master classes on subjects of interest to all industry professionals.

Those who enroll in the INC Academia Advanced Full Program get 25% off INC Congress registration! **Register now!**

For more information, visit: https://academia.nutfruit.org/onsite-course-on-nuts-and-dried-fruits/

PRELIMINARY PROGRAM

CALIFORNIA					VANCOUVER	
May 2	**May 3**	**May 4**	**May 5**	**May 6**	**May 7**	**May 8-10**
Registration and welcome *Wonderful Pistachios:* Orchard, processing plant and master class on marketing *Sun-Maid Growers of California:* Vineyard and processing plant Free time for own dinner arrangements Overnight in Fresno	*The Hulling Company:* Processing plant *Qcify:* Machinery demo *Almond Board of California:* Salida Regional Almond Variety Trial Free time for own dinner arrangements Overnight in Stockton	*Diamond Foods:* Processing plant *Pomona Farming:* Orchard *California Walnut Commission & Board:* Master class on market development activities, by Robert Verloop Cocktail & dinner Overnight in Sacramento	*TOMRA Sorting:* Machinery demo End of the course		Networking session with alumni Presentation of certificates for 2024 students	INC Congress

Sponsors and Exhibitors

VANCOUVER
INC XLI WORLD NUT AND DRIED FRUIT CONGRESS

Promote your brand, boost your reputation and take advantage of an environment fully focused on the nut and dried fruit industry. Take a sponsorship opportunity and ensure your brand is visible to more than 1,300 world-class industry leaders and professionals. Sponsorship opportunities and booths are still available —visit the congress website to see what is left!

Thank you for supporting the INC Congress!
congress.nutfruit.org

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Put the future of your nuts business on the road to success.

PATENT UNITEC PATENT

UNITEC innovative technologies care about your **hazelnuts, your walnuts** and your business.

At **UNITEC** we are used to taking care of your future with **cutting-edge**, **intelligent and automated solutions** able to ensure **important and real results over time**.

With **UNITEC technologies** your nuts have more value.
Nothing is left to chance thanks to an **efficient and complete sorting of the qualities**:

Hazelnut Vision - **external quality**, **shape defects**, in addition to **optical size** and **color**.
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Because your business needs certainties. And a bright future.

Enter the world of UNITEC. The future of your business will be on the road to success.

HAZELNUT VISION Unitec Technology | WALNUT VISION Unitec Technology

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INC WORLD NUT & DRIED FRUIT CONGRESS
Vancouver, Canada
May 8-10, 2024

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FOR THE NUT & DRIED FRUIT INDUSTRY

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WHY JOIN THE INC ACADEMIA?

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- Authors from the world's most prestigious institutions
- Industry know-how in just one place
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SO WHAT ARE YOU WAITING FOR?

ENROLL NOW AT:
ACADEMIA.NUTFRUIT.ORG

WHERE INDUSTRY LEADERS ARE SHAPED!

INC Hosts Yet Another Successful Pavilion at Gulfood 2024

26 co-exhibitors joined the INC in Dubai for one of the world's largest food and beverage trade fairs, making the INC Pavilion a veritable who's who of the nut and dried fruit industry.

This year's Gulfood proved to be yet another colossal success for the nut and dried fruit sector. The INC exhibited with its largest pavilion to date at Gulfood, hosting 26 co-exhibitors and spanning an impressive 228 m² in Za'abeel Hall 5. The INC Pavilion provided a dynamic platform for key industry players, showcasing the diversity of the nut and dried fruit world with representation from 14 countries.

Gulfood continues to solidify its position as one of the world's premier food and hospitality events. Now in its 29th edition, this event achieved record figures, hosting 5,500+ exhibitors from 190 countries and welcoming more than 130,000 visitors in total.

Throughout the event, the INC Pavilion served as the focal point for industry professionals, offering unparalleled visibility for the participating companies. Co-exhibitors took full advantage of the opportunity to display their products, make new contacts and develop business relationships.

During the five-day event, the INC also hosted a Happy Hour sponsored by Al Jameel International. This eagerly anticipated social event, held on the evening of February 19, provided a relaxed yet professional atmosphere for key industry players to rub elbows and catch up with their esteemed colleagues.

INC Pavilion Highlights

To see more photos from Gulfood, visit: **https://www.flickr.com/photos/international_nut/albums**

We thank our exhibitors for joining us at Gulfood

Coralino SA · Goodvalley Dried Fruits & Nuts · Green & Gold Macadamias · Mariani Est. Family 1906 · Meda Nuts & Dried Fruits · Mepe Middle East Products Export Co. · Nutagra · Pacific Nuts & Dried Fruits Chile · Premier Nut Est. 2005 · Sheng De Foods · Agra Taj · P.T. Comextra Majora Since 1988 Makassar - Indonesia · Frunut Quality Sustainable Walnuts · Nogam Walnuts and Almonds · Mehmet Türkel · Aydın Aydın Kuruyemis · Boudjebel · Diamond of California · Invernada · Mateks · RD Rong Da · Santis Frut · Seastar Food Manufacturing & Trading · Produce Sunshine · Terraida Roots from the valley · Valbifrut · Wenders Western India Cashew Co. · Al Jameel International

See you next time at SIAL

Missed out on Gulfood? No worries!

We will be back in action later this year at SIAL Paris with the largest INC Pavilion to date, set to host 40 co-exhibitors. From **October 19-23, 2024**, the nut and dried fruit industry will gather at the world's largest food innovation event, which this year is expected to draw more than 310,000 visitors from over 200 countries.

To learn more about becoming an exhibitor, visit: inc.nutfruit.org/pavilions/sial-paris/

We look forward to seeing you there!

INC Multi-Country Dissemination Plan: Spreading Healthy Goodness Worldwide

The INC Multi-Country Dissemination Plan continues to make waves across the globe, championing the remarkable virtues of nuts and dried fruits. With campaigns blazing trails in China and India, we've already touched the lives of millions of young people. And in 2024, we're gearing up to dazzle millions more across Latin America.

China: Connecting With Digital Natives

The INC's campaign in China was launched in May 2022 with a targeted and highly localized strategy aimed at increasing the awareness and consumption of nuts and dried fruits. Now at the end of its second year, the campaign, which targets Generation Z, has reached 99.4 million people. The campaign strategy has been fully digital, focusing on key channels WeChat, Douyin and Weibo. Consumer lifestyle and food trends, such as shareable experiences and beverage toppings, have played a key role. This is reflected heavily in our 2023 content, where a series of 16 animated videos featuring our mascot Mr. Nutfruit were created to illustrate daily situations relevant to Gen Z, reflecting key trends while introducing the consumption of nuts and dried fruits.

In 2024, the campaign will continue to connect with China's Gen Z at an emotional level, transmitting values that are important to this generation, such as confidence, personal growth, and self-love and care. The slogan of the campaign will be "One Small Change = A Totally Different Day" and will focus on video content that will share advice, experiences and reflections that will help young people feel identified and supported.

Enhancing our efforts to boost consumption in China, in 2023 the INC signed collaboration agreements with INC members ChaCha and Three Squirrels. Under these agreements, the INC works together with our Chinese counterparts to promote and spread the health benefits of nuts and dried fruits and share new ways of consumption to sustainably increase consumption in China.

CAMPAIGN HIGHLIGHTS TO DATE (2022-2024)

Reached	Interactions	Contents created	Influencer collaborations
99.4 M	1.2 M	238	80

India: Harnessing Tradition and Trends to Inspire a Vibrant Young Demographic

In May 2023, the INC's multi-country initiative entered India with the aim of boosting consumption and balancing supply and demand. The communication plan focuses on a Gen Z audience that is rooted in tradition and intersected with wellness trends, offering a compelling growth avenue. At the end of its first year, the campaign has already impacted 87 million members of Gen Z in India through a carefully designed content strategy that aims to break down obstacles and misconceptions that prevent young people from embracing nut and dried fruit consumption. It not only highlights benefits that address key concerns of India's Gen Z —energy, immunity and proteins— but also provides practical guidance on how to incorporate nuts and dried fruits into daily routines.

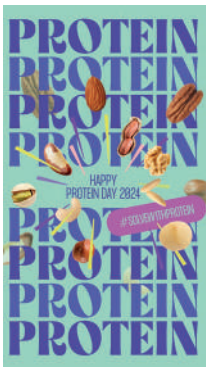
In 2024, the INC plans to enter the market with its new campaign titled "It's Time to Make a Switch." Why this slogan? Because Gen Z in India, being digital natives, are constantly on the move and bombarded with information. Consequently, it's crucial for them to switch gears, take a break and prioritize their health and well-being. Therefore, the INC is developing a digital strategy focused on sharing everyday situations where the shift will be facilitated by incorporating nuts and dried fruits into their daily routines.

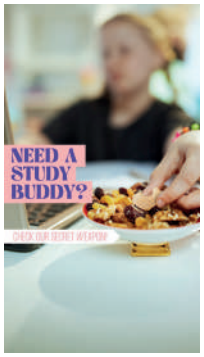
Latin America: A New Frontier for Nut and Dried Fruit Promotion

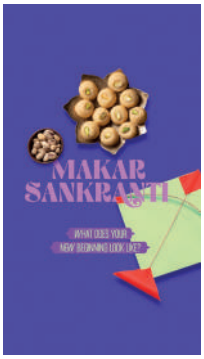
This 2024, the INC will be expanding its multi-country initiative into Latin America, specifically Brazil, Argentina, Chile and Mexico. In commencing operations within the region, the INC embarked on market research to gain consumer insights specific to each country, aiming to uncover any cultural disparities and allowing INC to meticulously craft an effective campaign concept, honing in on the paramount trends relevant to Gen Z in Latin America. The research has now concluded, so we will be sharing this exciting campaign with all of you in the coming months.

CAMPAIGN HIGHLIGHTS TO DATE (2023-2024)

Reached	Interactions	Contents created	Influencer collaborations
87.1 M	3.9 M	110	30

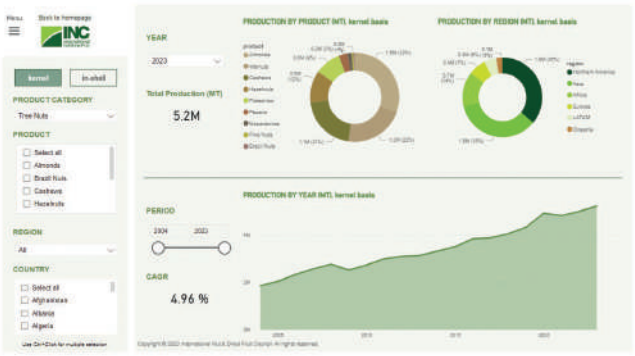






New INC Statistics Database

The INC recently unveiled its new online statistics database. Exclusive to INC members, this is the nut and dried fruit industry's most comprehensive repository of statistical information. With a sleek look and feel, the new database is faster, more intuitive, and features new data sets and dashboards.



The upgraded database includes new datasets —planted area, productivity per hectare and trade value— as well as new features designed to help users get the most out of the tool. For example, for all tree nut and peanut records, switching from kernel to in-shell basis is as simple as clicking a button. Compound annual growth rate (CAGR) is calculated for multi-year selections, and supply and consumption data can be filtered by gross national income groups.

The reports offered by the new database allow users to make customized queries on yearly data on crops/production, beginning and ending stocks, total supply, planted area, productivity, consumption, consumption per capita, trade volumes and values, filtering by year, country and product. It is also possible to display historical trends for multi-year periods. The database contains data on 68 producing countries, 193 exporting countries and 224 importing/consuming countries.

To access the database, visit https://inc.nutfruit.org/members-area/statistics/ (login required).

700,000+
statistical records at your fingertips, including:

500,000+
trade records

120,000+
consumption records

INC Executive Committee Meeting in Los Angeles

On February 3, 2024, the INC Executive Committee met in Los Angeles to review the actions undertaken under the INC's strategic plan.

As part of the INC's new initiative "Country Outreach: Global Program for a Better World," the Executive Committee approved an economic modelling study that will be conducted by KPMG. This study will quantify the healthcare savings that could be achieved by increasing nut consumption to recommended levels in Spain, Germany and the United States. The Committee also approved the creation of the World Declaration of Nuts and Dried Fruits, an industry manifesto positioning nuts and dried fruits as catalysts for positive change in the areas of climate change, sustainability and global health. Additionally, the Committee approved a calendar of actions and locations for outreach in 2024.

As for the INC's Multi-Country Dissemination Plan, the Committee reviewed the results of market research commissioned by the INC to guide the campaigns that are set to launch in Latin America this year. The Committee also reviewed the results of the China and India campaigns and received a status update on the process of adapting the INC's consumer website for audiences in different countries and in different languages.

The Committee approved NUTS 2025, which will take place in October 2025 at the INC headquarters. At this scientific meeting, top researchers will provide updates on the NUTPOOL study and determine the next steps towards obtaining approval of a health claim.

Finally, the Committee reviewed the foundation's end-of-year 2023 accounts, the budget for 2024 and plans for the Vancouver congress and future INC events. The next Executive Committee meeting will take place in May 2024 in Vancouver.

Sonata: Pillars of Sustainability and Market Compliance

SONATA
Single Origin | Traceable | Consistent Taste

In continuation of our vision, we have gone beyond processing in Nigeria. We have set up a state-of-the art, new-generation cashew processing plant to process raw cashew nuts at origin with an installed capacity of over 30,000 tons in Côte d'Ivoire. We employ more than 1,000 nationals from nearby areas, of whom 80% are women. We work directly with cashew farmers, supporting them in good agronomic practices and harvest handling, while fostering inclusive development of communities for producing cashew nuts. We incorporate world-class standards in operations, producing high-quality nuts that are fully compliant in food safety, code of conduct and traceability. We are currently exporting to the US, the UK, Europe and Asia.

Sonata's success comes from its way of doing business. For us, it is not about short-term profits but rather a sustainable way to grow the business, making sure it is resilient enough to sustain its growth and profits. Sonata's business sustainability incorporates six pillars:

- **Globally competitive** - Economically competitive position, processing and farms
- **Full traceability** - Complete traceability from farm to fork, single-origin nuts
- **Inclusive growth** - Thriving communities, prosperous farmers, employment, education and skills
- **Food safety** - Processed under international food safety standards
- **Code of conduct** - Safe working conditions, ethical practices, socially responsible and environmentally friendly production processes
- **Certifications** - Sonata has HACCP, BRC, Kosher, Halal, SMETA and organic certification in both of the origins where it operates

To organize the RCN supply chain and address the existing challenges, Sonata International started a farmer linkage program in 2020 to establish direct linkages with smallholder farmers with the help of USDA PRO-Cashew in Côte d'Ivoire. Sonata International had worked in three main regions, Marahoue, Bere and Hambol, as well as border areas of adjacent regions such as Gbeke and Tchologo.

Sonata has clear goals and objectives for its farmer linkage program. It is all about having a win-win partnership. Sonata secures competitive, sustainable sourcing of raw nuts and has full traceability, while farmers are linked directly and trained on best practices to improve yield and quality, and thus their income. As of March 2023, Sonata has trained around 8,000 farmers.

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La Nogalera

— GOOD ROOTS, AMAZING NUTS —

Pecans

Nut-thing but the Best

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We shell well over **100 million** pounds a year

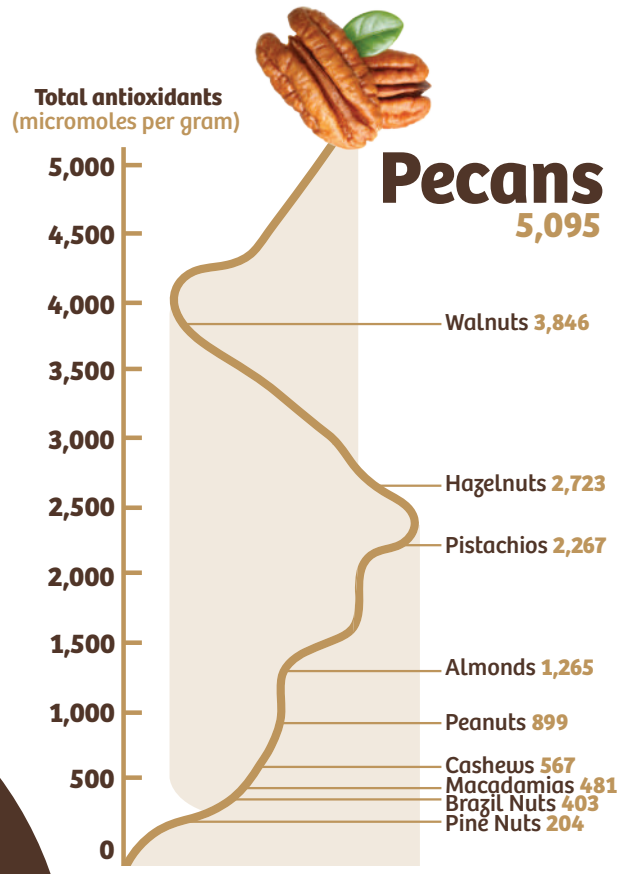
- **Oil roast & Dry roast capabilities**
- **Confectionary capabilities**

Our certifications

USDA ORGANIC · JAS Kiwa BCS Öko-Garantie · DUN & BRADSTREET ESG REGISTERED · NON GMO Project VERIFIED · Great Place To Work. · SQF · CCIM HALAL CONSULTANTS · Sedex

#1 Super Nut

Pecans contain more antioxidants than any other nut!



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Global Statistical Review

Crop Progress Report

March 2024

Statistics are also available at our website **inc.nutfruit.org**

Map shows 5 top producing countries. Other major producers listed below.

Main Producing Countries

Almonds

USA	Chile
Australia	Morocco
Spain	Italy
Iran	Syria
Türkiye	
Tunisia	
Greece	

Brazil Nuts

Bolivia	
Peru	
Brazil	

Cashews

India	Nigeria
Côte d'Ivoire	Indonesia
Viet Nam	Cambodia
Guinea-Bissau	
Brazil	
Tanzania	
Benin	

Hazelnuts

Türkiye	China
Italy	Iran
USA	Chile
Georgia	
Azerbaijan	
Spain	
France	

Macadamias

South Africa	China
Australia	Colombia
Kenya	New Zealand
USA	Viet Nam
Guatemala	
Malawi	
Brazil	

Pecans

USA	
Mexico	
South Africa	
Australia	
Brazil	
China	

Pine Nuts

China	Türkiye
North Korea	Portugal
Pakistan	Italy
Afghanistan	
Mongolia	
Russia	
Spain	

Pistachios

USA	Italy
Iran	Australia
Türkiye	Spain
Syria	
Afghanistan	
China	
Greece	

Walnuts

China	India
USA	Romania
Iran	Argentina
Türkiye	Hungary
Ukraine	Italy
Chile	Georgia
France	Australia
Moldova	

Peanuts

China	Viet Nam
India	Ghana
USA	Brazil
Nigeria	Nicaragua
Indonesia	Côte d'Ivoire
Argentina	
Senegal	

Dates

Saudi Arabia	Sudan
Egypt	Oman
Iran	Tunisia
UAE	Morocco
Pakistan	Libya
Algeria	Israel
Iraq	USA

Dried Apricots

Türkiye	
Iran	
China	
USA	
South Africa	
Australia	

Dried Cranberries

USA	
Canada	
Chile	

Dried Figs

Türkiye	
Egypt	
Iran	
USA	
Greece	
Spain	
Italy	

Prunes

USA	South Africa
Chile	
France	
Argentina	
Serbia	
Australia	
Italy	

Raisins Sultanas Currants

USA	Greece
Türkiye	Australia
Iran	Argentina
China	South Africa
India	
Chile	
Uzbekistan	

Listed by global production as per FAO but not necessarily meaning quantities going through commercial channels.

The INC will continue updating the statistics in next issues of the *Nutfruit* magazine and newsletters.

Almonds

杏仁 / لوز / बादाम / Almendra / Amêndoas / Amande / Badem

The information contained herein was prepared between mid-January and mid-February 2024.

USA. The January 2024 Almond Board of California Position Report, published on February 9, 2024, showed receipts of 2.391 billion pounds (approx. 1.1 million metric tons) crop year-to-date. The 2023/24 crop receipts were trailing the 2022/23 crop by 3.39% through the first six months. The USDA receipts show an average inedible reject percentage of 4.19%, which underscores the insect pressure in the 2023/24 crop.

Total shipments August 2023 through January 2024 were up 9% from the previous year. The computed inventory was down 11% due to lower crop receipts and increased export shipments. Domestic shipments were down slightly (-0.6%) vs. 2022/23 at 361 M lbs. (approx. 164,000 MT). Export shipments were up 12% at 1 B lbs. (approx. 462,000 MT). Shipments to the largest export destination, India, were up 25% at 238 M lbs. (approx. 108,000 MT, kernel weight equivalent). Shipments to Europe and the Middle East/Africa were up 8% each. As of mid-January, the continued conflict in the Red Sea was creating delays in product transit in the Middle East, as well as a substantial increase in shipping costs; thus, buyers were trying to quickly rebuild inventories.

Even while the final 2023/24 crop size was still being determined at the time of reporting, with most of the crop delivered by the end of January and the higher rejects, industry sources were expecting a 2023 crop below the USDA objective estimate, of around 2.45 B lbs. (approx. 1.1 M MT). Driven by the increased shipments and the potentially lower crop, sources within the industry were anticipating an ending inventory below 600 M lbs. (approx. 272,000 MT).

The market was expecting its first glimpse of the 2024/25 crop potential with the bloom in February. Up to then, chill hours and bud set had been good, and the snowpack was expected to reach average levels with the January snowfall.

Australia. According to the Almond Board of Australia (ABA), the crop estimate for the 2024/25 season, at the time of reporting, was 164,700 MT (kernel weight equivalent). This forecast is 59% higher than the 2023/24 season's official intake of 103,381 MT and represents a return to average-type yields across the five growing regions in Australia.

The LandIQ spatial mapping data released by ABA in 2023 confirmed that the industry's footprint, largely across the southern Murray Darling Basin, was just over 62,400 hectares. The 2024 crop prediction places almond production back on its long-term trajectory of more than 200,000 MT within the next 3-5 years. Demand for Australian almonds remained strong with the industry's 2023/24 sales exceeding the season's intake by November and raising expectation that there will be very little stock carried over into the 2024/25 selling year.

Spain. In spite of unseasonal weather conditions during the growing cycle, the 2023/24 crop was, at the time of writing this report, estimated at 100,000 MT, lower than anticipated at the beginning of the season, yet up from the low crop of 2022/23 and back to 2021/22 and 2020/21 levels. While production keeps trending upwards owing to new acreage, the warm winter temperatures and severe drought might impact the 2024 output.

Portugal. As reported by Portugal Nuts, the 2023/24 crop was, at the time of this report, expected to amount to 20,000 MT, up by 21% vs. 2022 owing to a good flowering period and increased bearing hectares. Harvest started slightly earlier than last season and lasted a couple of weeks longer due to heavy showers towards the end. The drought in southern Portugal, coupled with irrigation water restrictions, resulted in kernels of smaller size but higher quality.

Estimated World Almond Production. Kernel Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
USA*(MM lbs)	837	2,528	**3,365**	800	800	2,343	**3,143**	500
USA* (MT)	380,000	1,147,710	**1,527,710**	363,200	363,200	1,063,720	**1,426,920**	227,000
AUSTRALIA	15,000	140,963	**155,963**	20,000	20,000	103,381	**123,381**	6,000
SPAIN	15,000	61,684	**76,684**	15,337	15,337	100,000	**115,337**	28,751
TÜRKIYE	450	25,000	**25,450**	0	0	25,000	**25,000**	0
ITALY	0	20,900	**20,900**	0	0	21,800	**21,800**	1,000
PORTUGAL	0	16,500	**16,500**	0	0	20,000	**20,000**	0
MOROCCO	2,500	18,000	**20,500**	3,000	3,000	18,500	**21,500**	2,500
CHINA	0	17,500	**17,500**	0	0	15,000	**15,000**	0
CHILE	0	12,400	**12,400**	0	0	14,150	**14,150**	0
TUNISIA	1,200	13,000	**14,200**	1,500	1,500	12,000	**13,500**	1,000
GREECE	0	10,000	**10,000**	0	0	6,500	**6,500**	700
IRAN	0	4,000	**4,000**	1,000	1,000	6,000	**7,000**	2,000
OTHERS	0	12,500	**12,500**	0	0	16,000	**16,000**	0
WORLD TOTAL	**414,150**	**1,500,157**	**1,914,307**	**404,037**	**404,037**	**1,422,051**	**1,826,088**	**268,951**
WORLD CONSUMPTION (Supply-End. Stock)				**1,510,270**				

Sources: Almond Board of California,* Almond Board of Australia, AEOFRUSE, Portugal Nuts, ChileAlmonds, Greek Nuts & Fruits Trade Association and other INC sources. *All the US estimates are sourced by the ABC, except for the ending stock 2023/24 which is an INC forecast. Crop 2023/2024 estimate reflects the crop receipts minus 2% loss & exempt through January 31, 2024.
Season 2022/2023 starts as of 2022 harvest; and 2023/2024 as of the 2023 harvest in both hemispheres.

Amazonia (Brazil) Nuts

巴西果 / جوز البرازيل / ब्राजील नट्स / Coquito de Brasil / Castanhas do Brasil / Noix de Bresil / Brezilya fingigi

The information contained herein was prepared between mid-January and mid-February 2024.

The 2022/23 season concluded with minimal carryover, both in the origin countries and in the consuming/destination markets. Bolivia's remaining carryover was purchased by Brazil due to their shortfall in meeting domestic Christmas demand. Brazil's shortage resulted from them having exported significant volumes earlier in the year when local market prices were low. Additionally, a scarcity of cashews in the Brazilian market drove increased demand for Brazil nuts as an alternative.

The 2023/24 season started very differently from last year's slow kickoff. Low carryovers around the world mean that demand has been strong, and shipments for most shippers have been fully sold up to May. By mid-February, some buyers were gathering raw materials to cover contracts. Offers were limited and raw material prices continued to rise as factories were eager to open and start cracking, which is typical behavior at the beginning of each crop. However, this year it appears that there has been more confidence in buying raw material at higher prices as the demand for early shipments has been strong.

While, at the time of reporting, prices have been firming, they were still in their lower range. With this price correction, the whole supply chain can work more effectively and this wonderful nut can continue to protect the Amazon rainforest where it grows.

Estimated World Amazonia (Brazil) Nut Production. In-shell Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
BOLIVIA	6,000	57,000	**63,000**	1,500	1,500	66,000	**67,500**	3.000
PERU	2,400	15,000	**17,400**	600	600	16,500	**17,100**	1.200
BRAZIL	600	9,000	**9,600**	300	300	7,500	**7,800**	600
WORLD TOTAL	**9,000**	**81,000**	**90,000**	**2,400**	**2,400**	**90,000**	**92,400**	**4.800**
WORLD CONSUMPTION (Supply-End. Stock)				**87,600**				

Estimated World Amazonia (Brazil) Nut Production. Kernel Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
BOLIVIA	2,000	19,000	**21,000**	500	500	22,000	**22,500**	1,000
PERU	800	5,000	**5,800**	200	200	5,500	**5,700**	400
BRAZIL	200	3,000	**3,200**	100	100	2,500	**2,600**	200
WORLD TOTAL	**3,000**	**27,000**	**30,000**	**800**	**800**	**30,000**	**30,800**	**1,600**
WORLD CONSUMPTION (Supply-End. Stock)				**29,200**				

Source: INC.
Season 2022/23: Harvest from November/December '22 though March/April '23.
Season 2023/24: Harvest from November/December '23 through March/April '24.

Cashews

腰果 / کاجو / काजू / Anacardo / Castanhas de caju / Noix de caju / Kaju cevizi

The information contained herein was prepared between mid-January and mid-February 2024.

Following the prior season's shorter crop, India's 2023/24 production seemed to have rebounded to its 2021/22 levels. Most Western African 2023/24 crop estimates were revised up from the previous report and appeared to have grown as compared to 2022/23.

Flowering in West Africa started in December and the first harvests were expected to begin by mid-January, although, at the time of reporting, the impact of heavy showers during Q4 2023 on crop size and quality remained to be seen. According to Australia's Bureau of Meteorology, the ongoing strong El Niño event was near its peak by mid-January and was expected to weaken in the following weeks, possibly causing rainfall across growing areas in the northern hemisphere that could impact 2024/25 crops, especially in Viet Nam and Cambodia.

In the southern hemisphere, while the 2023/24 Tanzanian crop seemed to have increased by 41% vs. 2022/23, the Brazilian crop declined by 20% y/y as compared to the 2022/23 record crop, as per the latest projection from the Brazilian Institute of Geography and Statistics (IBEG).

During the southern hemisphere harvest in Q4 2023, the raw cashew nut market remained quiet compared to previous years and Tanzania's high pricing did not seem to have impacted overall pricing of in-shells. Shipments from Tanzania have been very slow due to logistical challenges, meaning that the bulk of the crop was expected to arrive, at the time of this report, in India and Viet Nam as of Q1 2024.

Following the drop in kernel consumption in the US and the EU during the second half of 2022, owing to economic uncertainty and high inflation, demand picked up by mid-2023 and inventories started getting used up, with increased imports towards the end of 2023. Demand was also strong in China, India and the Middle East as, in these markets, retail prices quickly reflected the favorable pricing throughout 2023.

All in all, for the full year 2023, global kernel consumption growth seems to be near +9% y/y vs. 2022, averaging significant growth in China, the Middle East and the EU and stagnant demand in the US and India. By the end of 2023, destination stocks remained tight and might be further impacted due to the Red Sea hassle.

Estimated World Cashew Production. Raw Cashew Nut (RCN) · Metric Tons

Country	2022/2023				2023/2024*			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
INDIA	n/a	590,000	590,000	n/a	n/a	740,000	740,000	n/a
CAMBODIA	n/a	670,000	670,000	n/a	n/a	680,000	680,000	n/a
VIET NAM	n/a	450,000	450,000	n/a	n/a	400,000	400,000	n/a
CÔTE D'IVOIRE	n/a	1,270,000	1,270,000	n/a	n/a	1,335,000	1,335,000	n/a
NIGERIA	n/a	270,000	270,000	n/a	n/a	360,000	360,000	n/a
GUINEA-BISSAU	n/a	250,000	250,000	n/a	n/a	270,000	270,000	n/a
BENIN	n/a	250,000	250,000	n/a	n/a	250,000	250,000	n/a
GHANA	n/a	215,000	215,000	n/a	n/a	250,000	250,000	n/a
BURKINA FASO	n/a	140,000	140,000	n/a	n/a	160,000	160,000	n/a
GUINEA CONAKRY	n/a	140,000	140,000	n/a	n/a	160,000	160,000	n/a
TOGO	n/a	73,000	73,000	n/a	n/a	120,000	120,000	n/a
SENEGAL	n/a	95,000	95,000	n/a	n/a	100,000	100,000	n/a
GAMBIA	n/a	28,000	28,000	n/a	n/a	28,000	28,000	n/a
MALI	n/a	7,000	7,000	n/a	n/a	10,000	10,000	n/a
Subtotal Western Africa	**n/a**	**2,738,000**	**2,738,000**	**n/a**	**n/a**	**3,043,000**	**3,043,000**	**n/a**
Subtotal Northern Hemisphere	**n/a**	**4,448,000**	**4,448,000**	**n/a**	**n/a**	**4,863,000**	**4,863,000**	**n/a**
TANZANIA	n/a	185,000	185,000	n/a	n/a	260,000	260,000	n/a
MOZAMBIQUE	n/a	90,000	90,000	n/a	n/a	90,000	90,000	n/a
KENYA	n/a	5,000	5,000	n/a	n/a	5,000	5,000	n/a
Subtotal Eastern Africa	**n/a**	**280,000**	**280,000**	**n/a**	**n/a**	**355,000**	**355,000**	**n/a**
BRAZIL	n/a	147,200	147,200	n/a	n/a	117,800	117,800	n/a
INDONESIA	n/a	80,000	80,000	n/a	n/a	80,000	80,000	n/a
Subtotal Southern Hemisphere	**n/a**	**507,200**	**507,200**	**n/a**	**n/a**	**552,800**	**552,800**	**n/a**
OTHERS	n/a	55,000	55,000	n/a	n/a	56,700	56,700	n/a
WORLD TOTAL	**n/a**	**5,010,200**	**5,010,200**	**n/a**	**n/a**	**5,472,500**	**5,472,500**	**n/a**
WORLD CONSUMPTION (Supply-End. Stock)				**5,010,200**				

Source: INC

*Harvest from January '23 through June '23 (northern hemisphere) and from September '23 through February '24 (southern hemisphere).

Hazelnuts

榛子 / بندق / हेज़लनट्स / Avellana / Avelãs / Noisette / Findik

The information contained herein was prepared between mid-January and mid-February 2024.

Türkiye. The post-harvest crop estimate was revised down from the initial forecast, which resulted in two hikes in market prices in mid-September and early January, 25% and 15% up, respectively. As the Turkish lira devaluation put a lid on hard currency-based pricing, the limited crop is likely to be the main discussion topic until the end of the season. At the time of reporting, the Turkish Grain Board (TMO) was still holding around 100,000 metric tons of the previous crop in storage.

Growing regions' average temperatures were close to the recorded highs until mid-January but dropped down towards February. Pollination started at the beginning of February, with a two-week delay. Weather conditions throughout the rest of winter and stinkbug infestation remain issues of concern whose effects will be evaluated during spring and summer.

Italy. Owing to unfavorable weather conditions during the growing cycle, the 2023 harvest was delayed and there were some quality issues. By December, although growers were reluctant to sell and the pre-Christmas market was fairly quiet, the good-quality raw material was already starting to become scarce. By the beginning of February over half of the 2023/24 crop was already sold.

At the time of this report, it was still too early to anticipate the 2024 output, but flowering was looking good, with a good male-to-female flower ratio. However, there was some concern about the chill hour requirements being met, as temperatures through January had been too warm.

USA. Challenging weather during collection along with reduced kernel and in-shell sizing contributed to a slight decrease in crop receipts compared to earlier estimates. However, the US continues to inch up total production year over year.

Reduced sizing and elevated levels of rancidity, decay and serious shrivel complicated processing and marketing at a time when both traditional and new customers are turning towards the US as an additional origin for kernels. Despite this, US hazelnuts continue to enjoy good market acceptance, with much of the groundwork laid for larger volumes in the future. Given the strong market at the time of this report, a very low volume of carryout was expected.

Estimated World Hazelnut Production. In-shell Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
TÜRKIYE	105,000	830,628	**935,628**	215,000	215,000	650,000	**865,000**	145,000
ITALY	10,000	90,000	**100,000**	5,000	5,000	87,000	**92,000**	5,000
USA	12,000	72,400	**84,400**	2,500	2,500	81,700	**84,200**	1,500
CHILE	500	54,000	**54,500**	300	300	71,100	**71,400**	200
AZERBAIJAN	3,000	55,000	**58,000**	2,000	2,000	65,000	**67,000**	3,000
GEORGIA	5,000	40,000	**45,000**	2,500	2,500	40,000	**42,500**	0
CHINA	1,500	30,600	**32,100**	2,800	2,800	30,000	**32,800**	2,000
IRAN	500	12,000	**12,500**	600	600	18,000	**18,600**	2,000
FRANCE	700	5,500	**6,200**	0	0	12,000	**12,000**	2,000
SPAIN	500	7,000	**7,500**	200	200	9,500	**9,700**	500
OTHERS	0	30,000	**30,000**	0	0	31,000	**31,000**	0
WORLD TOTAL	**138,700**	**1,227,128**	**1,365,828**	**230,900**	**230,900**	**1,095,300**	**1,326,200**	**161,200**
WORLD CONSUMPTION (Supply-End. Stock)				**1,134,928**				

Estimated World Hazelnut Production. Kernel Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
TÜRKIYE	52,500	415,300	**467,800**	107,500	107,500	325,000	**432,500**	72,500
ITALY	4,650	38,700	**43,350**	2,150	2,150	36,500	**38,650**	2,100
USA	5,280	31,900	**37,180**	1,100	1,100	35,900	**37,000**	660
CHILE	215	23,220	**23,435**	129	129	30,600	**30,729**	86
AZERBAIJAN	1,140	24,000	**25,140**	880	880	25,000	**25,880**	1,140
GEORGIA	1,900	14,800	**16,700**	925	925	15,000	**15,925**	0
CHINA	600	12,850	**13,450**	1,180	1,180	12,600	**13,780**	840
IRAN	225	5,400	**5,625**	270	270	7,600	**7,870**	840
FRANCE	280	2,200	**2,480**	0	0	4,800	**4,800**	800
SPAIN	225	3,150	**3,375**	90	90	4,300	**4,390**	225
OTHERS	0	12,600	**12,600**	0	0	13,000	**13,000**	0
WORLD TOTAL	**67,015**	**584,120**	**651,135**	**114,224**	**114,224**	**510,300**	**624,524**	**79,191**
CONSUMPTION (Supply-End. Stock)				**536,911**				

Sources 2022/23: INC industry sources, Black Sea Hazelnut Exporters Association, Georgian Hazelnut Growers Association, China Chamber of Commerce for Import and Export of Foodstuffs, and AEOFRUSE.
Sources 2023/24: INC industry sources, Georgian Hazelnut Growers Association, China Chamber of Commerce for Import and Export of Foodstuffs, and AEOFRUSE.

Macadamias

夏威夷果 / مكاديميا / मैकाडामिया / Macadamia / Macadâmias / Macadamia / Makedemia cevizi

The information contained herein was prepared between mid-January and early March 2024.

South Africa. According to Macadamias South Africa (SAMAC), and based on handlers/processors' reports, the 2023 crop was estimated at 78,091 metric tons (at 1.5% nut-in-shell moisture content; 79,700 MT at 3.5% NIS m.c.), up by 13% from the 2022 crop.

Forecasting the 2024 crop at this early stage is difficult, however, South Africa expects some steady crop growth in the 2024 season and estimates 90,135 metric tons forecast (at 1.5% NIS m.c.; 92,000 MT at 3.5% m.c.). This is mainly due to new plantings coming into production and maturing. There was a substantially reduced carryover stock position, compared to the previous season, and thus overall total supply from South Africa remained less in 2024 compared to 2023 when this was taken into account. Crop quality is expected to be good and with the attractive pricing, there has been good early demand for new crop shipments for both in-shell and kernel.

Australia. As reported by the Australian Macadamia Society, the 2024 macadamia crop is predicted to reach 56,000 MT in-shell at 3.5% m.c. This represents a 16% increase on last year's crop of 48,400 MT, which was impacted by lower-than-expected yields and a softening of the farm gate price. All major growing regions experienced favorable weather conditions for flowering in early spring. This, combined with a considerable quantity of new trees set to come into bearing, provides the platform for a good season in 2024.

Kenya. As per the Nut Processors Association of Kenya, the 2024 crop was, at the time of writing this report, forecasted at 46,000 MT (at 3.5% m.c.), up by 8% from 2023. The producing region in the central highlands saw very good rainfall over the growing season, thus an increased crop of significantly better quality was anticipated.

Estimated World Macadamia Production. In-shell Basis · Metric Tons

Country	2023				2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
SOUTH AFRICA	n/r	79,700	**79,700**	n/r	n/r	92,000	**92,000**	n/r
AUSTRALIA	n/r	48,400	**48,400**	n/r	n/r	56,000	**56,000**	n/r
CHINA	n/r	67,900	**67,900**	n/r	n/r	68,500	**68,500**	n/r
KENYA	n/r	42,500	**42,500**	n/r	n/r	46,000	**46,000**	n/r
USA	n/r	15,100	**15,100**	n/r	n/r	15,000	**15,000**	n/r
GUATEMALA	n/r	14,500	**14,500**	n/r	n/r	15,000	**15,000**	n/r
VIET NAM	n/r	9,000	**9,000**	n/r	n/r	10,000	**10,000**	n/r
MALAWI	n/r	12,540	**12,540**	n/r	n/r	8,500	**8,500**	n/r
BRAZIL	n/r	7,685	**7,685**	n/r	n/r	6,500	**6,500**	n/r
COLOMBIA	n/r	1,100	**1,100**	n/r	n/r	1,100	**1,100**	n/r
OTHERS	n/r	17,000	**17,000**	n/r	n/r	17,100	**17,100**	n/r
WORLD TOTAL	**n/r**	**315,425**	**315,425**	**n/r**	**n/r**	**335,700**	**335,700**	**n/r**
ESTIMATED WORLD CONSUMPTION (Supply-End. Stock)				**315,425**				

Estimated World Macadamia Production. Kernel Basis · Metric Tons

Country	2023				2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
SOUTH AFRICA	n/r	25,500	**25,500**	n/r	n/r	29,400	**29,400**	n/r
AUSTRALIA	n/r	15,500	**15,500**	n/r	n/r	17,640	**17,640**	n/r
CHINA	n/r	16,900	**16,900**	n/r	n/r	17,120	**17,120**	n/r
KENYA	n/r	8,500	**8,500**	n/r	n/r	9,280	**9,280**	n/r
USA	n/r	3,300	**3,300**	n/r	n/r	3,300	**3,300**	n/r
GUATEMALA	n/r	2,850	**2,850**	n/r	n/r	3,000	**3,000**	n/r
VIET NAM	n/r	2,700	**2,700**	n/r	n/r	3,000	**3,000**	n/r
MALAWI	n/r	3,115	**3,115**	n/r	n/r	2,100	**2,100**	n/r
BRAZIL	n/r	1,920	**1,920**	n/r	n/r	1,625	**1,625**	n/r
COLOMBIA	n/r	220	**220**	n/r	n/r	220	**220**	n/r
OTHERS	n/r	4,250	**4,250**	n/r	n/r	4,275	**4,275**	n/r
WORLD TOTAL	**n/r**	**84,755**	**84,755**	**n/r**	**n/r**	**90,960**	**90,960**	**n/r**
ESTIMATED WORLD CONSUMPTION (Supply-End, Stock)				**84,155**				

Sources: Macadamias South Africa, Australian Macadamia Society, China Chamber of Commerce for Import and Export of Foodstuffs, Nut Processors Association of Kenya, USDA, Brazilian Macadamia Association and other INC sources. n/r: not reported or not relevant.
Reported at 3.5% nut-in-shell moisture content.

Pecans

碧根果 / بقان / पेकान / Pacana / Nozes / Noix de pécan / Pekan cevizi

The information contained herein was prepared between mid-January and mid-February 2024.

USA. Depending on the growing region, milder-than-expected weather delayed harvest between two and four weeks. As a result of a smaller than anticipated supply, with industry inventories at 30-year lows and overall quality/yield ratios off by 10%, prices of both in-shell and kernels continued to firm throughout January. Due to a shorter-than-expected South African crop and quality issues in Sonora (Mexico), China stepped back into the US market, focusing on Georgia Desirables and Stuarts. Purchases between August 1 and December 1 more than doubled the prior year's total shipments. While domestic consumption was up, the war in Ukraine, inflation and high interest rates in the EU caused overall exports to fall by 26% in 2023.

Mexico. Record high temperatures throughout the growing region and water scarcity resulted in diminished nut fill and smaller nuts in orchards without proper irrigation/water supply. High input costs (fertilizer, fuel, etc.) throughout 2023 brought about poor management practices in most small to medium orchards, leading to lower yields and production. At the same time, quality issues reduced yields by 5-10%. In Sonora, this caused Chinese in-shell buyers to switch much of their buying to Georgia. While the overall market through January has been weak, the smaller-than-expected crop, and very low inventory levels in the US, have caused many farmers to keep their harvest out of the market.

China. The 2023 crop is estimated at 6,000 metric tons (in-shell basis), as previously anticipated. Quality is much better than that of the previous season, mainly due to adequate rainfall both before and after the bloom. Weather conditions remained favorable during harvesting time (November-December 2023).

In recent years, farmers have been improving management practices such as fertilization, pruning and irrigation, as well as the planting densities. The yield per tree has been increasing by 10-15%, reaching about 5-8 kg per tree (dry weight). The current growing area is about 80,000 hectares countrywide and new plantings were expected to continue over the winter. A significant expansion of pecan cultivation is foreseen in the coming years, with a projected increase of about 10% year on year.

Estimated World Pecan Production. In-shell Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
USA	79,000	125,964	**204,964**	66,355	66,355	123,129	**189,484**	56,452
MEXICO	0	136,079	**136,079**	0	0	122,471	**122,471**	0
SOUTH AFRICA	0	31,846	**31,846**	3,000	3,000	22,000	**25,000**	100
CHINA	0	4,500	**4,500**	0	0	6,000	**6,000**	0
BRAZIL	500	3,000	**3,500**	0	0	4,500	**4,500**	0
ARGENTINA	0	2,500	**2,500**	0	0	2,500	**2,500**	0
AUSTRALIA	0	2,950	**2,950**	0	0	2,400	**2,400**	0
OTHERS	0	3,500	**3,500**	0	0	3,600	**3,600**	0
WORLD TOTAL	**79,500**	**310,339**	**389,839**	**69,355**	**69,355**	**286,600**	**355,955**	**56,552**
WORLD CONSUMPTION (Supply-End. Stock)				**320,484**				

Estimated World Pecan Production. Kernel Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
USA	39,500	62,900	**102,400**	33,178	33,178	61,565	**94,743**	28,226
MEXICO	0	68,040	**68,040**	0	0	61,236	**61,236**	0
SOUTH AFRICA	0	15,000	**15,000**	1,400	1,400	11,000	**12,400**	50
CHINA	0	2,250	**2,250**	0	0	3,000	**3,000**	0
BRAZIL	250	1,400	**1,650**	0	0	2,200	**2,200**	0
ARGENTINA	0	1,250	**1,250**	0	0	1,250	**1,250**	0
AUSTRALIA	0	1,530	**1,530**	0	0	1,250	**1,250**	0
OTHERS	0	1,750	**1,750**	0	0	1,800	**1,800**	0
WORLD TOTAL	**39,750**	**154,120**	**193,870**	**34,578**	**34,578**	**143,301**	**177,879**	**28,276**
WORLD CONSUMPTION (Supply-End. Stock)				**159,293**				

Source: Argentine Pecan Committee and other INC sources.
Season 2022/2023 starts as of 2022 harvest; and 2023/2024 as of the 2023 harvest in both hemispheres.

Pine Nuts

松子 / صنوبر / पाइन नट्स / Piñón / Pinhões / Pignon / Çam fistigi

The information contained herein was prepared between mid-January and mid-February 2024.

Asia. According to the Chinese Chamber of Commerce, domestic and European demand over 2023 were weaker than anticipated. In Europe demand fell, especially for *Pinus koraiensis*, while *Pinus sibirica* accounted for most of the European imports, owing to its comparatively lower price. Nonetheless, as per industry sources, local demand for *P. koraiensis* increased at the beginning of the year as the Lunar New Year holiday approached.

As of the first week of February, Chinese inventory was at around 5,000-6,000 metric tons of kernels and stocks in North Korea and Mongolia were on the low side. In Russia, most of the 2022/23 crop was already sold and the 2023/24 ending stock was at about 1,000 MT.

The outlook for 2024/25, at the time of reporting, was good. A bumper crop of *P. koraiensis* was expected in China, North Korea and Russia. Chinese production of *P. koraiensis* was anticipated to reach around 70,000-80,000 MT, while a smaller crop of a few thousand metric tons was expected for *P. sibirica*.

Mediterranean. The 2023 crops in Spain and Portugal seemed to be below earlier expectations, as empty pine cones were higher than average due to the drought and the heat wave last October. Based on winter temperatures and rainfall, expectations for the 2024 harvest, at the time of reporting, were optimistic.

Estimated World Pine Nut Production. In-shell Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
ASIA (Pinus koraiensis, P. sibirica, P yunnanensis and P. gerardiana)								
CHINA	2,500	50,000	**52,500**	40,000	40,000	45,000	**85,000**	n/a
NORTH KOREA	5,000	30,000	**35,000**	8,000	8,000	20,000	**28,000**	n/a
RUSSIA (Siberia)	7,500	41,000	**48,500**	2,500	2,500	6,500	**9,000**	n/a
MONGOLIA	0	18,000	**18,000**	500	500	5,000	**5,500**	n/a
AFGHANISTAN	0	9,100	**9,100**	2,000	2,000	4,400	**6,400**	n/a
PAKISTAN	800	7,000	**7,800**	1,500	1,500	4,300	**5,800**	n/a
SUBTOTAL	**15,800**	**155,100**	**170,900**	**54,500**	**54,500**	**85,200**	**139,700**	**n/a**
MEDITERRANEAN (Pinus pinea)								
TÜRKIYE	320	3,700	**4,020**	830	830	5,400	**6,230**	n/a
SPAIN	400	1,200	**1,600**	900	900	3,000	**3,900**	n/a
PORTUGAL	100	1,200	**1,300**	0	0	1,400	**1,400**	n/a
ITALY	0	4,000	**4,000**	0	0	950	**950**	n/a
OTHERS	0	350	**350**	0	0	360	**360**	n/a
SUBTOTAL	**820**	**10,450**	**11,270**	**1,730**	**1,730**	**11,110**	**12,840**	**n/a**
WORLD TOTAL	**16,620**	**165,550**	**182,170**	**56,230**	**56,230**	**96,310**	**152,540**	**n/a**
WORLD CONSUMPTION (Supply-End. Stock)				**125,940**				

Estimated World Pine Nut Production. Kernel Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
ASIA (Pinus koraiensis, P. sibirica, P yunnanensis and P. gerardiana)								
CHINA	625	12,500	**13,125**	10,000	10,000	11,250	**21,250**	n/a
NORTH KOREA	1,250	7,500	**8,750**	2,000	2,000	5,000	**7,000**	n/a
RUSSIA (Siberia)	1,500	10,350	**11,850**	625	625	1,800	**2,425**	n/a
MONGOLIA	0	5,900	**5,900**	165	165	1,500	**1,665**	n/a
AFGHANISTAN	0	4,500	**4,500**	970	970	2,200	**3,170**	n/a
PAKISTAN	380	3,360	**3,740**	720	720	2,150	**2,870**	n/a
SUBTOTAL	**3,755**	**44,110**	**47,865**	**14,480**	**14,480**	**23,900**	**38,380**	**n/a**
MEDITERRANEAN (Pinus pinea)								
TÜRKIYE	90	890	**980**	200	200	1,300	**1,500**	n/a
SPAIN	80	220	**300**	160	160	580	**740**	n/a
PORTUGAL	19	220	**239**	0	0	300	**300**	n/a
ITALY	0	800	**800**	0	0	190	**190**	n/a
OTHERS	0	70	**70**	0	0	73	**73**	n/a
SUBTOTAL	**189**	**2,200**	**2,389**	**360**	**360**	**2,443**	**2,803**	**n/a**
WORLD TOTAL	**3,944**	**46,310**	**50,254**	**14,840**	**14,840**	**26,343**	**41,183**	**n/a**
WORLD CONSUMPTION (Supply-End. Stock)				**35,414**				

Sources: China Chamber of Commerce for Import and Export of Foodstuffs and INC.

Pistachios

开心果 / فستق / पिस्ता / Pistacho / Pistácios / Pistache / Antep fistigi

The information contained herein was prepared between mid-January and mid-February 2024.

USA. The California 2023/2024 crop finished at over 675,000 metric tons (1.49 billion pounds), a record crop for the second consecutive year.

Crop year-to-date US shipments through December 2023 hit a record of 232,000 MT (511 million lbs.), a 73% increase from the December 2022 year-to-date total of 134,000 MT (295 M lbs.) and a 68% increase from 2020's total of 137,800 MT (304 M lbs.).

At the time of this report, global demand was anticipated to remain strong, with China showing strong buying before Chinese New Year and firm demand in Europe due to dry pipelines at the beginning of the new pistachio season. Demand was also good from India and Middle East markets. Ramadan 2024 starts on March 10, and was anticipated to drive demand in the Middle East during Q1 2024.

Iran. As reported by the Iran Pistachio Association, year-to-date export shipments by the 4th marketing month (December 22, 2023–January 20, 2024) reached 57,000 MT of in-shell equivalent pistachios. With an estimated 8,000 MT of domestic consumption, the remaining marketable inventory was estimated at 135,000 MT.

While 29% of this year's initial marketable inventory was exported through the fourth marketing month, this ratio stood at 43% in the last bumper crop year of 2020. Kernels and green kernels amounted to 37% (including closed shells as raw material for kernels), above the four-year average figure of 28% for the same month. Demand for kernels and green peeled pistachio kernels (GPPK) remains strong. As GPPK supply from other origins was limited in the Middle East market, Iranian GPPKs are facing less competition in this market compared to previous years.

Türkiye. In spite of the good 2023 crop and a relatively good carry-in, the Turkish pistachio was, at the time of reporting, another "off marketing year" in terms of export volumes due to the high price levels for raw material.

Exporters' expectations are set on the upcoming harvest, which is anticipated to be a bumper crop. On top of that, the domestic currency devaluation during this season was expected to boost international shipments and allow Turkish exporters to get back to the market.

Spain. As per European Pistachio Council reports, 2023/24 crop yield was higher than expected in terms of quantity; the previous estimate of 4,500 MT was revised up to 6,000 MT. However, quality was lower than anticipated. On average, pistachio size was smaller than in previous years and the percentage of closed shells was higher. Besides, the percentage of spotted pistachios was also higher than in prior seasons due to rains and hailstorms that occurred during the summer.

The 2024/25 crop is expected to be similar to this season's and is preliminarily forecasted at 6,000 MT.

Australia. According to the Australian Pistachio Growers' Association, at the time of writing this report, growing conditions were favorable and the 2024 crop was looking very good. Increased production from the new pistachio plantings and an on-crop —preliminarily predicted at 4,800 MT—were anticipated.

Estimated World Pistachio Production. In-shell Basis · Metric Tons

Country	2021/2022				2022/2023			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
USA (M lbs)	354	884	**1,238**	164	164	1,493	**1,657**	400
USA (MT)	160,720	401,340	**562,060**	74,460	74,460	677,830	**752,290**	181,600
IRAN	15,000	92,000	**107,000**	20,000	20,000	180,000	**200,000**	30,000
TÜRKIYE	135,000	200,000	**335,000**	95,000	95,000	180,000	**275,000**	175,000
SYRIA	0	19,500	**19,500**	0	0	25,500	**25,500**	0
SPAIN	0	3,000	**3,000**	0	0	6,000	**6,000**	0
GREECE	0	9,500	**9,500**	0	0	4,500	**4,500**	0
ITALY	0	4,100	**4,100**	50	50	4,100	**4,150**	0
AFGHANISTAN	0	2,360	**2,360**	0	0	2,500	**2,500**	0
AUSTRALIA	0	3,650	**3,650**	0	0	1,400	**1,400**	0
CHINA	0	600	**600**	0	0	500	**500**	0
WORLD TOTAL	**310,720**	**736,050**	**1,046,770**	**189,510**	**189,510**	**1,082,330**	**1,271,840**	**386,600**
WORLD CONSUMPTION (Supply-End. Stock)				**857,260**				

Sources: Iran Pistachio Association, European Pistachio Council, Greek Nuts & Fruits Trade Association, Australia Pistachio Growers' Association and other INC sources.
Season 2022/2023 starts as of 2022 harvest; and 2023/2024 as of the 2023 harvest in both hemispheres.

Walnuts

核桃 / الجوز / अखरोट / Nuez / Nozes / Noix / Ceviz

The information contained herein was prepared between mid-January and mid-February 2024.

China. Final receipts are estimated at 1.35 million metric tons, 7% below the early forecast. Shipments through January-December 2023 reached a historic high, up by 80% and 49% for in-shell and shelled vs. 2022, respectively. New crop shipments year-to-date (October-December 2023) amounted to 59,747 metric tons in-shell and 27,367 MT shelled, up 72% and 116% from 2022, respectively.

The record early-season shipments combined with the lower crop have kept the price up 10-15%. Supported by the Spring Festival demand, and with lower inventories than last year, the market —at the time of this report— was expected to remain firm for the remainder of the season.

Winter saw cold weather and abundant snowfall in most origins. Therefore, a good harvest is expected in 2024.

USA. According to the California Walnut Commission & Board, and based on handler receipts as of February 1, 2024, the 2023/24 crop was estimated at a record of 743,890 MT (820,000 short tons). Favorable weather throughout the growing season, along with high-density acreage entering production, accounts for some of the difference with regard to the USDA objective forecast.

Year to date total shipments (September 1-December 31, 2023) both domestic and international, increased vs. 2022. In-shell exports added up to 72,114 MT (159 million pounds), up by 23%, with significant increases from Asia (India, Japan, South Korea and Thailand) and Europe. Domestic shelled shipments grew by 25% and amounted to 46,887 MT (103 M lbs.); while exports were at 40,814 MT (90 M lbs.), up 8% from 2022. The highest rises were observed also for Europe and Asia (Viet Nam, Thailand and South Korea).

Chile. As reported by Chilenut, the 2023 crop ended up slightly larger than the previous report, at over 176,000 MT. Exports year-to-date (March 21, 2023–December 31, 2023) amounted to 169,228 MT (in-shell equivalent), 1% down from 2022. While in-shell exports increased by 6%, shelled shipments were 6% below 2022. India experienced the most significant increases for both shelled and in-shell exports (up 210% and 92% from 2022, respectively).

Estimated World Walnut Production. In-shell Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
CHINA	50,000	1,400,000	**1,450,000**	120,000	120,000	1,350,000	**1,470,000**	50,000
USA	125,000	678,500	**803,500**	72,600	72,600	743,890	**816,490**	127,005
CHILE	1,500	187,424	**188,924**	1,900	1,900	176,448	**178,348**	1,900
UKRAINE	2,000	70,000	**72,000**	8,000	8,000	78,000	**86,000**	2,000
TÜRKIYE	2,000	48,000	**50,000**	0	0	65,000	**65,000**	0
IRAN	0	46,500	**46,500**	0	0	40,000	**40,000**	0
ROMANIA	1,300	30,000	**31,300**	3,000	3,000	34,500	**37,500**	1,000
FRANCE	2,000	50,000	**52,000**	5,000	5,000	28,000	**33,000**	0
INDIA	3,000	31,000	**34,000**	0	0	28,000	**28,000**	3,000
ARGENTINA	0	25,000	**25,000**	3,000	3,000	20,000	**23,000**	1,000
MOLDOVA	570	17,800	**18,370**	0	0	18,100	**18,100**	500
HUNGARY	0	13,500	**13,500**	0	0	14,000	**14,000**	0
ITALY	0	18,370	**18,370**	0	0	12,850	**12,850**	0
GEORGIA	0	8,200	**8,200**	0	0	8,000	**8,000**	0
AUSTRALIA	0	13,500	**13,500**	0	0	7,000	**7,000**	0
OTHERS	0	16,500	**16,500**	0	0	15,000	**15,000**	0
WORLD TOTAL	**187,370**	**2,654,294**	**2,841,664**	**213,500**	**213,500**	**2,638,788**	**2,852,288**	**186,405**
WORLD CONSUMPTION (Supply-End. Stock)				**2,628,164**				

Estimated World Walnut Production, Kernel Basis · Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
CHINA	22,000	616,000	**638,000**	52,800	52,800	594,000	**646,800**	22,000
USA*	55,000	271,400	**326,400**	29,000	29,000	327,300	**356,300**	55,900
CHILE	700	87,200	**87,900**	884	884	82,000	**82,884**	880
UKRAINE	880	30,800	**31,680**	3,520	3,520	31,600	**35,120**	820
TÜRKIYE	900	21,600	**22,500**	0	0	26,000	**26,000**	0
IRAN	0	19,065	**19,065**	0	0	16,400	**16,400**	0
ROMANIA	585	13,500	**14,085**	1,350	1,350	15,300	**16,650**	440
FRANCE	880	22,000	**22,880**	2,200	2,200	12,320	**14,520**	0
INDIA	990	10,230	**11,220**	0	0	11,200	**11,200**	1,200
ARGENTINA	0	10,750	**10,750**	1,300	1,300	8,600	**9,900**	430
MOLDOVA	251	7,832	**8,083**	0	0	8,000	**8,000**	220
HUNGARY	0	5,800	**5,800**	0	0	6,020	**6,020**	0
ITALY	0	8,300	**8,300**	0	0	5,800	**5,800**	0
GEORGIA	0	3,772	**3,772**	0	0	3,680	**3,680**	0
AUSTRALIA	0	5,535	**5,535**	0	0	2,850	**2,850**	0
OTHERS	0	6,600	**6,600**	0	0	6,000	**6,000**	0
WORLD TOTAL	**82,186**	**1,140,384**	**1,222,570**	**91,054**	**91,054**	**1,157,070**	**1,248,124**	**81,890**
WORLD CONSUMPTION (Supply-End, Stock)				**1,131,516**				

Sources: California Walnut Board and Commission, Chilenut, Walnut Growers Association of Türkiye and other INC sources.
*California Walnut Board and Commission does not measure in kernel basis. Kernel equivalent is an INC estimation.
Season 2022/2023 starts as of 2022 harvest; and 2023/2024 as of the 2023 harvest in both hemispheres.

Peanuts

花生 / فول سوداني / मूंगफली / Cacahuete / Amendoins / Cacahuète / Yer fistigi

The information contained herein was prepared between mid-January and mid-February 2024.

China. As reported by the China Chamber of Commerce, in 2023/24, driven by the high price of peanuts in 2022/23, the planting area was increased, resulting in a good output. Peanut prices reached 12,000 yuan per metric ton when they first hit the market last September. In spite of the demand driven by the Spring Festival —a high season for peanut and peanut oil consumption— the market was quieter than expected and consumption decreased significantly compared to last year as crushing companies were not willing to buy raw material at high prices.

Moving forward, the first week of February, the purchase price dropped to 9,600 yuan/MT, which was the lowest point in the 2023/24 season year-to-date. Inventories held by farmers were increased vs. previous years, and it was estimated that only 20% of the output had been sold. The overall domestic supply of oil was large and oil prices were low. Therefore, oil imports decreased significantly from last year and it was difficult to support high raw material prices.

While good exporting prices were conducive to strong international shipments during Q4 2023, prices began to rise at the beginning of February owing to the Red Sea disruptions.

Finally, it remained to be seen how the domestic market would react after the Spring Festival and the resulting impact on planting intentions for the new crop.

USA. As reported by the USDA in February 2024, the US 2023/24 crop was estimated at 2.67 million MT, up 6% from 2022/23. Planted area was estimated at 667,731 hectares, an increase of 14% percent vs. the previous season. Harvest was almost completed by the end of November 2023 at the eight main producing estates, one percentage point behind last year, but one percentage point ahead of the 5-year average. The estimated harvested area amounted to 635,356 ha, up by 14% from 2022/23. The average yield was estimated at 4.2 MT/ha (in-shell basis), down 0.3 MT from the previous season. Record high yields were reported for Arkansas and Virginia.

Peanut stocks in commercial storage year-to-date through December 31, 2023, amounted to 2.2 M MT of equivalent farmer stock, 5% down as compared with the previous year.

Argentina. At the time of writing this report, prospects for the 2024 harvest were optimistic and good yields were anticipated.

According to the Agricultural Estimates Weekly Report (released on February 8, 2024, by the Agriculture Secretariat of the Ministry of Economy of Argentina), the crop in the province of Córdoba —which accounts for around 75% of the planted area— was generally in good condition and had been tolerating the adverse weather conditions. However, a small percentage of the area was presenting symptoms of severe stress.

In the Northwestern region, the environmental situation was similar, and precipitation was also necessary to undergo flowering without limitations. While the crop was in good condition despite the high atmospheric demand, the late-planted crops were the most affected as they were being impacted by the water deficit during the early stages of development.

Estimated World Peanut Production. In-shell Basis · 1000 Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Crop	Total Supply	Ending Stock	Beginning Stock	Crop	Total Supply	Ending Stock
CHINA	5	17,900	**17,905**	92	92	17,990	**18,082**	285
INDIA	668	6,300	**6,968**	344	344	6,400	**6,744**	346
NIGERIA	427	4,284	**4,711**	439	439	4,300	**4,739**	418
USA	1,071	2,514	**3,585**	922	922	2,672	**3,594**	886
SENEGAL	756	1,502	**2,258**	656	656	1,715	**2,371**	651
ARGENTINA	382	963	**1,345**	337	337	1,375	**1,712**	382
BRAZIL	28	890	**918**	35	35	890	**925**	28
INDONESIA	148	930	**1,078**	112	112	880	**992**	101
GHANA	22	611	**633**	47	47	600	**647**	47
VIET NAM	42	400	**442**	27	27	390	**417**	32
CÔTE D'IVOIRE	15	243	**258**	13	13	240	**253**	11
NICARAGUA	1	193	**194**	1	1	200	**201**	1
MEXICO	28	86	**114**	21	21	92	**113**	23
SOUTH AFRICA	18	70	**88**	18	18	80	**98**	26
OTHERS	1,516	12,046	**13,562**	1,545	1,545	12,025	**13,570**	1,442
WORLD TOTAL	**5,127**	**48,932**	**54,059**	**4,609**	**4,609**	**49,849**	**54,458**	**4,679**
WORLD CONSUMPTION (Supply-End. Stock)				**49,450**				

Sources: China Chamber of Commerce for Import and Export of Foodstuffs and USDA.

Dates

खजूर / تمر / 椰枣 / Dátil / Tâmaras / Datte / Hurma

The information contained herein was prepared between mid-January and mid-February 2024.

In spite of the increase in shipping costs, Q4 2023, known as the main campaign, saw a significant increase in sales vs. 2022. At the time of reporting, while overall demand was predicted to remain robust for both dates for consumption and those intended for processing, industry sources also anticipated that most producing countries would boost the sale of dates for processing in 2024.

World production has continued to grow considerably, particularly in the Middle East and North Africa, owing to new plantings, which are mainly oriented towards specific varieties in line with market demand.

Estimated World Table Date Production. Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Production	Total Supply	Ending Stock	Beginning Stock	Production	Total Supply	Ending Stock
SAUDI ARABIA	130,000	199,750	**329,750**	100,000	100,000	265,000	**365,000**	110,000
EGYPT	25,000	123,250	**148,250**	5,000	5,000	180,000	**185,000**	20,000
UAE	50,000	127,500	**177,500**	30,000	30,000	160,000	**190,000**	40,000
ALGERIA	25,000	110,500	**135,500**	5,000	5,000	140,000	**145,000**	20,000
IRAN	38,000	144,750	**182,750**	15,000	15,000	135,000	**150,000**	7,500
TUNISIA	30,000	102,000	**132,000**	3,000	3,000	125,000	**128,000**	10,000
IRAQ	15,000	51,000	**66,000**	2,000	2,000	65,000	**67,000**	12,000
ISRAEL	10,000	29,750	**39,750**	3,000	3,000	40,000	**43,000**	10,000
USA	12,000	25,500	**37,500**	12,000	12,000	30,000	**42,000**	12,000
MOROCCO	6,000	17,000	**23,000**	5,000	5,000	30,000	**35,000**	6,000
OMAN	8,000	21,250	**29,250**	7,000	7,000	26,000	**33,000**	6,000
PAKISTAN	8,000	21,250	**29,250**	0	0	25,000	**25,000**	5,000
SUDAN	3,000	8,500	**11,500**	2,500	2,500	8,000	**10,500**	1,000
LIBYA	400	1,700	**2,100**	300	300	3,000	**3,300**	300
OTHERS	25,000	29,750	**54,750**	20,000	20,000	40,000	**60,000**	25,000
WORLD TOTAL	**385,400**	**1,013,450**	**1,398,850**	**209,800**	**209,800**	**1,272,000**	**1,481,800**	**284,800**
WORLD CONSUMPTION (Supply-End. Stock)				**1,189,050**				

Source: INC and Iran Dried Fruit Exporters Association. These data concern only dates that have been packaged and presented for sale as such. They account for about 15% of global production of raw dates. Dates consumed in bulk and those destined for processing are not included.

Dried Apricots

杏脯 / مشمش مجفف / सूखे खुबानी / Orejón / Damascos secos / Abricot sec / Kuru kayisi

The information contained herein was prepared between mid-January and mid-February 2024.

Türkiye. As reported by the Aegean Exporters' Association, total dried apricot exports year-to-date (August 1, 2023–February 17, 2024) amounted to 42,386 metric tons, down by 19% from the same period last year. Whole dried apricots accounted for 86% of total exports, followed by cut apricots with 9% and industrial use with the remaining 5%. Europe continued to be the main market, with imports amounting to about 13,200 MT and a trade value of US$86.4 million, followed by the Americas with around 9,900 MT, valued at US$63.6 million.

Estimated World Dried Apricot Production. Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Production	Total Supply	Ending Stock	Beginning Stock	Production	Total Supply	Ending Stock
TÜRKIYE	5,000	85,610	**90,610**	7,000	7,000	87,170	**94,170**	7,000
IRAN	3,000	24,000	**27,000**	0	0	26,000	**26,000**	0
UZBEKISTAN	0	7,000	**7,000**	0	0	10,000	**10,000**	0
TAJIKISTAN	0	5,000	**5,000**	0	0	7,500	**7,500**	0
AFGHANISTAN	0	6,000	**6,000**	0	0	5,000	**5,000**	0
CHINA	0	5,000	**5,000**	0	0	3,750	**3,750**	0
USA	0	1,900	**1,900**	0	0	1,700	**1,700**	0
SOUTH AFRICA	0	804	**804**	0	0	800	**800**	0
OTHERS	3,000	30,000	**33,000**	0	0	30,200	**30,200**	0
WORLD TOTAL	**11,000**	**165,314**	**176,314**	**7,000**	**7,000**	**172,120**	**179,120**	**7,000**
WORLD CONSUMPTION (Supply-End. Stock)				**169,314**				

Sources: Aegean Exporters' Association, Iran Dried Fruit Exporters Association and other INC sources. Season 2022/2023 starts as of 2022 harvest; and 2023/2024 as of the 2023 harvest in both hemispheres.

Dried Cranberries

小紅莓 / التوت البري المجفف / सूखे क्रैनबेरी / Arándano rojo / Airelas secas / Canneberge séchée / Keçiyemisi

The information contained herein was prepared between mid-January and mid-February 2024.

At the time of reporting, the 2023/24 fresh fruit crop estimate was 12.6 million barrels, down 2% from last season. Wisconsin saw higher yields (+20%) vs. 2022/23. Quebec returns were down 40% as compared to last year and Massachusetts was down by 12% following a challenging growing season that negatively impacted quality and volume. New Jersey, Oregon and Washington all saw increased crops with yields above average quality.

Estimated World Sweetened Dried Cranberry Production. Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Production	Total Supply	Ending Stock	Beginning Stock	Production	Total Supply	Ending Stock
USA	2,161	130,612	**132,773**	9,740	9,740	131,721	**141,461**	9,367
CANADA	1,124	45,150	**46,274**	3,890	3,890	42,189	**46,079**	3,678
CHILE	289	10,103	**10,392**	557	557	9,890	**10,447**	320
WORLD TOTAL	**3,574**	**185,865**	**189,439**	**14,187**	**14,187**	**183,800**	**197,987**	**13,365**
WORLD CONSUMPTION (T. Supply - End. Stock)				**175,252**				

Source: INC. The crop is harvested in the fall. End of year statistics are measured as of August 31. 2023/2024 represents the estimate of production and supply through August 31, 2024.

Dried Figs

无花果 / التين المجفف / सूखे अंजीर / Higo seco / Figos secos / Figue sec / Kuru incir

The information contained herein was prepared between mid-January and mid-February 2024.

Türkiye. As per the Aegean Exporters' Association, at the time of writing this report, 2023/24 production was estimated at 67,000 metric tons, down by 27% from the previous estimate. Exports year-to-date (October 6, 2023–February 17, 2024) amounted to around 37,840 MT, down 6% from 2022/23. Although 9% below the previous year, Europe remained the main market, with exports totaling about 14,500 MT. Shipments to the Americas, estimated at around 8,500 MT, grew by 7% vs. 2022/23.

Estimated World Dried Fig Production. Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Production	Total Supply	Ending Stock	Beginning Stock	Production	Total Supply	Ending Stock
TÜRKIYE	6,000	85,000	**91,000**	7,000	7,000	67,000	**74,000**	5,000
IRAN	1,000	28,000	**29,000**	0	0	26,000	**26,000**	6,000
AFGHANISTAN	2,000	10,000	**12,000**	0	0	22,000	**22,000**	1,000
SPAIN	2,000	9,000	**11,000**	1,300	1,300	6,800	**8,100**	0
USA	0	8,000	**8,000**	1,500	1,500	6,700	**8,200**	1,500
GREECE	0	4,000	**4,000**	100	100	2,500	**2,600**	50
ITALY	0	3,000	**3,000**	0	0	1,000	**1,000**	0
OTHERS	0	5,500	**5,500**	0	0	5,600	**5,600**	0
WORLD TOTAL	**11,000**	**152,500**	**163,500**	**9,900**	**9,900**	**137,600**	**147,500**	**13,550**
WORLD CONSUMPTION (Supply-End. Stock)				**153,600**				

Sources: Aegean Exporters' Association, Iran Dried Fruit Exporters Association, Greek Nuts & Fruits Trade Association and other INC sources.

Prunes

西梅 / البرقوق المجفف / प्रून / Ciruela seca / Ameixas secas / Pruneau / Kuru erik

The information contained herein was prepared between mid-January and mid-February 2024.

USA. As reported by the California Prune Board, the 2023 harvest started three weeks late as growers waited for sugars to develop. Plentiful precipitation and a relatively mild summer provided ideal growing conditions and led to the potential for a heavier crop. Growers who utilized pruning and shaker thinning were rewarded with an ideal range of sizes.

Chile. According to Chileprunes, following an uneven flowering in September 2023, frequent rains and moderate temperatures during late spring resulted in a good fruit set and normal development. Harvest was expected to start by the end of January for the fresh market —with China being a major, and growing, market— and by mid-February onwards for dried fruit.

Estimated World Prune Production. Metric Tons

Country	2023/2024				2024/2025			
	Beginning Stock	Production	Total Supply	Ending Stock	Beginning Stock	Production	Total Supply	Ending Stock
CHILE	5,000	68,000	**73,000**	10,000	10,000	68,000	**78,000**	n/a
USA	36,204	68,000	**104,204**	36,000	36,000	65,000	**101,000**	n/a
FRANCE	13,500	40,000	**53,500**	23,500	23,500	40,000	**63,500**	n/a
ARGENTINA	3,000	20,000	**23,000**	3,000	3,000	33,000	**36,000**	n/a
SERBIA*	1,000	5,000	**6,000**	1,000	1,000	4,800	**5,800**	n/a
AUSTRALIA	0	2,500	**2,500**	0	0	1,500	**1,500**	n/a
ITALY	500	1,450	**1,950**	0	0	1,500	**1,500**	n/a
SOUTH AFRICA	0	604	**604**	0	0	750	**750**	n/a
WORLD TOTAL	**59,204**	**205,554**	**264,758**	**73,500**	**73,500**	**214,550**	**288,050**	**n/a**
ESTIMATED WORLD CONSUMPTION (Supply-End. Stock)				**191,258**				

Sources: California Prune Board, Chile Prunes Association and other INC sources. Season 2023/2024 starts as of 2023 harvest; and 2024/2025 as of the 2024 harvest in both hemispheres. *Season 2024/25 estimated as the average of the last 5 seasons.

Raisins, Sultanas & Currants

葡萄干 / الزبيب / किशमिश / Uva pasa / Passas / Raisin sec / Kuru üzüm

The information contained herein was prepared between mid-January and mid-February 2024.

Türkiye. As reported by the Aegean Exporters' Association, exports year-to-date (September 1, 2023–February 17, 2024) added up to around 121,900 metric tons, down by 3% from 2022/23. Shipments to Europe, the main market, amounted to about 63,500 MT, down 7% from last season, followed by the UK with 28,000 MT (-9%). In contrast, exports to Asia and Oceania increased by 56%, reaching 16,400 MT.

China. Total Chinese dried grape production for the 2023/24 season was revised to 150,000 MT, 25% down from the previous estimate of 200,000 MT. Raisin production was impacted by spring frosts and low prices, resulting in lower harvesting labor availability and some vines being removed. Owing to the smaller Sultana production in Türkiye and the US, prices increased and Chinese Sultanas were, at the time of this report, already out of stock, with 70% bound for the export market and the remaining 30% for domestic sales. Green raisin pricing remained between stable and slightly increased for the top-quality range, which was exported to India, the EU and Japan. While the lower-quality range was destined for the domestic market, there were still 10,000 MT of inventory in the middle-quality range, which were expected to be carried into the next season.

USA. This season, raisin growers in California were challenged by unusual weather patterns starting with a very wet rainy season after several years of drought. Most of the San Joaquin Valley received rainfall totals greatly exceeding normal levels, causing flooding in some areas. The significant amount of rain combined with lower temperatures during the winter and spring months delayed the development of grapes. The months of June and July were warm but unseasonal rains at the tail end of summer added unneeded moisture to the fruit. Cool temperatures in September and October resulted in grapes requiring more days to dry. Consequently, the 2023 crop was about three to four weeks late, with the bulk of industry deliveries starting in mid-October.

The unexpected and undesirable weather patterns have reduced the production volume to what was expected, at the time of this report, to be about 153,000 MT. Shipments were projected to soften starting in February due to the smaller crop.

South Africa. As reported by Raisins South Africa, at the time of this report, the official estimation for 2023/24 production was 86,000 MT (of farmer stock), with 79,000 MT of marketable product, a good production outlook for the season and a return to a normal crop size compared to the past season. In terms of market distribution, the domestic market typically consumes approximately 8,000 to 10,000 MT annually. As usual, the export market was expected to play a significant role, with around 70,000 MT available for international markets.

The 2024 crop has shown promising development, with vineyards experiencing improved health compared to the previous season. The prevailing dry weather conditions, at the time of reporting, were excellent for the drying process, and this trend was expected to continue, driven by the ongoing El Niño cycle. Crop intake was expected to start in January and to be fully delivered by April.

At the time of this writing, the market dynamics suggested favorable pricing conditions for South African raisin producers, and this pattern was anticipated to continue in the foreseeable future. These price movements not only bolster farm gate production but also provide much-needed relief to growers. Over the past two years, growers have grappled with substantial increases in production costs and faced significant crop losses. The positive outlook is further supported by increased prices driven by a global shortage.

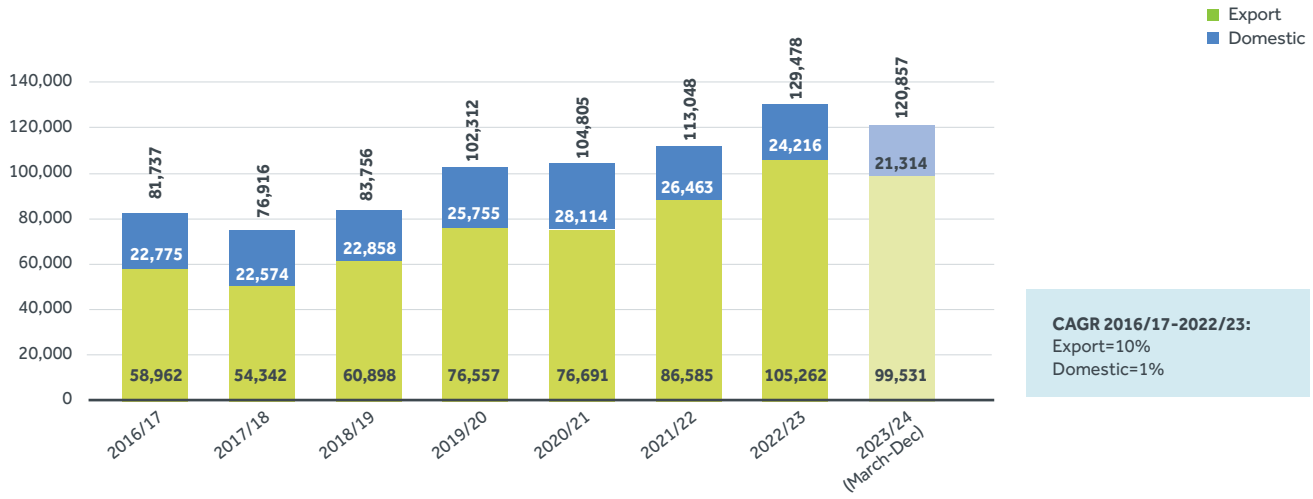
Estimated World Raisin / Sultana / Currant Production. Metric Tons

Country	2022/2023				2023/2024			
	Beginning Stock	Production	Total Supply	Ending Stock	Beginning Stock	Production	Total Supply	Ending Stock
TÜRKIYE	50,000	320,000	**370,000**	70,000	70,000	206,346	**276,346**	10,000
USA	56,000	165,000	**221,000**	59,000	59,000	153,000	**212,000**	45,000
CHINA	0	180,000	**180,000**	20,000	20,000	150,000	**170,000**	10,000
IRAN	3,000	180,000	**183,000**	8,000	8,000	150,000	**158,000**	8,000
INDIA	0	145,000	**145,000**	0	0	145,000	**145,000**	7,000
SOUTH AFRICA	7,430	57,219	**64,649**	6,000	6,000	79,000	**85,000**	6,000
CHILE	8,000	61,000	**69,000**	10,000	10,000	57,000	**67,000**	3,000
ARGENTINA	1,500	39,500	**41,000**	1,500	1,500	30,000	**31,500**	1,500
AFGHANISTAN	0	28,000	**28,000**	0	0	28,000	**28,000**	0
UZBEKISTAN	0	70,000	**70,000**	0	0	20,000	**20,000**	3,000
GREECE	2,500	21,000	**23,500**	7,000	7,000	12,000	**19,000**	0
AUSTRALIA	200	14,792	**14,992**	450	450	7,309	**7,759**	200
OTHERS	0	20,000	**20,000**	0	0	20,400	**20,400**	0
WORLD TOTAL	**128,630**	**1,301,511**	**1,430,141**	**181,950**	**181,950**	**1,058,055**	**1,240,005**	**93,700**
ESTIMATED WORLD CONSUMPTION (Supply-End. Stock)				**1,248,191**				

Sources: Aegean Exporters' Association, Iran Dried Fruit Exporters Association, USDA, Raisins South Africa, Greek Nuts & Fruits Trade Association, Dried Fruits Australia, 2023 International Seedless Dried Grape Producing Countries Conference and other INC sources.
Season 2022/2023 starts as of 2022 harvest; and 2023/2024 as of the 2023 harvest in both hemispheres.

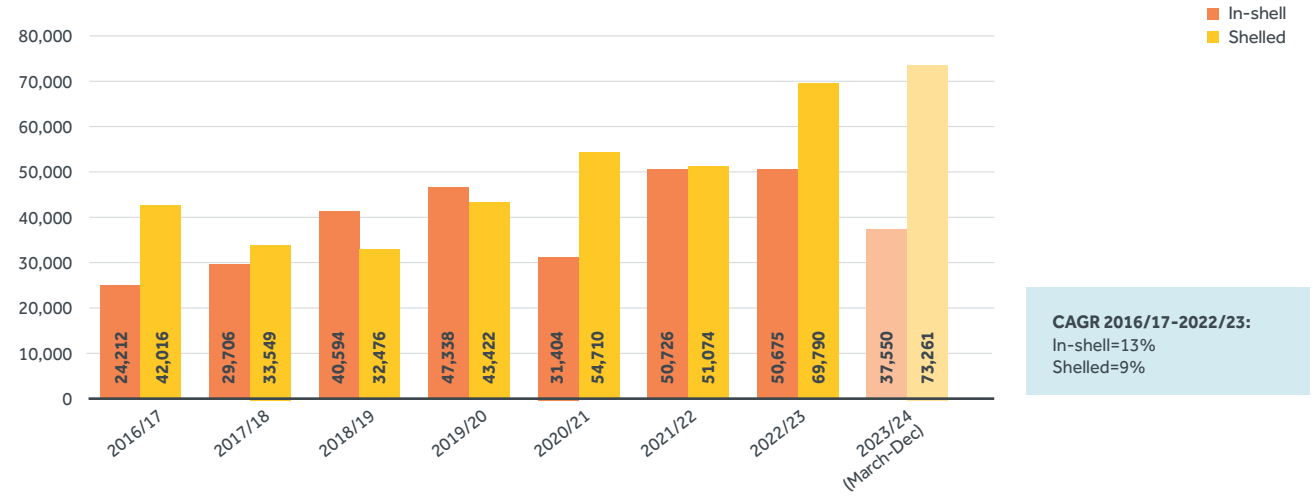
Special Report:
Australian Almond Shipments

Year-to-Date Total Shipments (Metric Tons, Kernel Weight Equivalent)



CAGR 2016/17-2022/23:
Export=10%
Domestic=1%

Year-to-Date Export Shipments (Metric Tons)



CAGR 2016/17-2022/23:
In-shell=13%
Shelled=9%

Year-to-Date Export Shipments (Metric Tons)

Data source: Almond Board of Australia Position Reports.

Special Report:

Australian Almond Shipments

Australian Almonds Export Shipments, Top Destinations (Metric Tons, Kernel Weight Equivalent)

Marketing Year (March-February)	2018/19	2019/20	2020/21	2021/22	2022/23	2022/23 (March-Dec)	CAGR (%) 2018/19-2022/23
ASIA PACIFIC	**40,596**	**56,979**	**49,527**	**64,464**	**73,879**	**65,525**	**16%**
Northeast Asia	**12,953**	**40,662**	**26,334**	**35,683**	**51,000**	**32,900**	**41%**
China (Mainland)	11,860	39,862	26,019	35,270	50,848	32,830	44%
Japan	827	638	315	398	142	56	-36%
Others	266	162	0	15	10	14	-56%
Southeast Asia	**10,732**	**4,895**	**8,372**	**10,124**	**11,802**	**13,476**	**2%**
Viet Nam	8,938	2,789	6,617	6,529	8,410	11,539	-2%
Thailand	1,131	1,255	1,142	1,908	2,073	903	16%
Indonesia	281	337	269	1,141	864	651	32%
Others	382	514	344	546	455	383	4%
South/Central Asia	**15,155**	**9,128**	**12,198**	**16,764**	**9,019**	**17,799**	**-12%**
India	15,155	8,599	11,655	16,711	8,993	17,799	-12%
Others	-	529	543	53	26	-	0%
Australasia/Oceania	**1,756**	**2,294**	**2,623**	**1,893**	**2,058**	**1,350**	**4%**
New Zealand	1,748	2,281	2,611	1,882	2,040	1,350	4%
Others	8	13	12	11	18	-	22%
EUROPE	**14,053**	**13,771**	**17,020**	**15,092**	**17,036**	**17,590**	**5%**
Western Europe	**13,428**	**13,368**	**16,552**	**14,510**	**16,700**	**17,204**	**6%**
Spain	3,907	3,179	3,270	5,296	8,642	9,627	22%
Germany	3,627	5,531	5,675	3,483	3,527	3,508	-1%
Netherlands	1,169	1,294	3,884	2,135	1,562	1,341	8%
Denmark	892	1,054	1,337	1,457	948	776	2%
France	1,045	535	702	1,055	747	756	-8%
Belgium	242	113	233	251	592	442	25%
Italy	868	367	274	222	313	181	-23%
United Kingdom	1,154	810	828	434	205	170	-35%
Sweden	60	60	75	55	95	76	12%
Greece	172	168	108	121	44	25	-29%
Others	292	257	166	1	25	302	-46%
Central & Eastern Europe	**625**	**403**	**468**	**582**	**336**	**386**	**-14%**
Poland	473	310	379	458	290	274	-12%
Others	152	93	89	124	46	112	-26%
MIDDLE EAST & AFRICA	**3,950**	**3,804**	**4,886**	**5,526**	**11,305**	**13,527**	**30%**
Middle East	**3,249**	**3,033**	**4,352**	**5,252**	**10,480**	**13,414**	**34%**
Türkiye	897	1,396	1,542	1,584	6,052	10,018	61%
United Arab Emirates	1,084	963	2,312	2,741	3,483	2,005	34%
Qatar	146	292	347	456	347	292	24%
Others	1,122	382	151	471	598	1,099	-15%
North Africa	**415**	**494**	**134**	**165**	**424**	**65**	**1%**
Libya	214	260	18	-	299	44	9%
Egypt	149	214	36	165	125	-	-4%
Others	52	20	80	-	-	21	0%
Sub-Saharan Africa	**286**	**277**	**400**	**109**	**401**	**48**	**9%**
South Africa	275	277	400	109	401	48	10%
Others	11	-	-	-	-	-	0%
AMERICAS	**2,299**	**2,003**	**5,258**	**1,503**	**3,042**	**2,899**	**7%**
North America	**1,981**	**1,969**	**4,340**	**932**	**2,919**	**2,822**	**10%**
United States of America	1,977	1,944	4,336	928	2,914	2,819	10%
Canada	4	25	4	4	5	3	6%
Latin America/Caribbean	**318**	**34**	**918**	**571**	**123**	**77**	**-21%**
Argentina	261	34	774	494	92	34	-23%
Others	57	0	144	77	31	43	-14%
WORLD TOTAL	**60,898**	**76,557**	**76,691**	**86,585**	**105,262**	**99,541**	**15%**

Data source: Almond Board of Australia Position Reports.

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Pistachios and the Promising Science of Weight Management

Contrary to common misconceptions about weight management, recent studies have shown that snacking on energy-dense nuts, specifically pistachios, does not lead to weight gain. In fact, research suggests that people on a weight loss plan can eat pistachios as a calorie-controlled snack and still lose weight.[1]

Unlike traditional snack options, pistachios boast healthy fats and are a good source of dietary fiber. Including fiber and fats, like unsaturated fats, in a diet can be important in weight management and a healthy lifestyle. Both contribute to satiety, helping individuals feel fuller longer, and provide important nutrients for overall health. By eating satiating foods like pistachios, individuals are inclined to decrease their calorie consumption, thereby assisting in weight loss or weight management.

Pistachios can be an integral part of an overall balanced eating pattern. A PREDIMED cross-sectional study on over 7,000 people found that those who ate more than three servings of nuts per week, including pistachios, had a lower incidence of obesity.[2] This study was further supported by a 2023 study that showed no change in energy intake or body weight in individuals who ate two servings of mixed nuts a day, which included pistachios, over a 16-week study period.[3] These findings highlight the potential of pistachios as a valuable addition to a balanced diet for those looking to maintain a healthy weight.

> *"Research continues to show that pistachios are a smart choice for weight management."*

In the context of health improvement and weight management, nutrition becomes essential. And among the dietary options offered to consumers, pistachios are proven to be nutritionally substantial. Whether eaten as a portion-controlled snack or as part of individuals' meals, pistachios can play a vital role in weight management while, in turn, delivering numerous health benefits.

Photo: American Pistachio Growers.

For more information on the research behind the health benefits of pistachios plus recipes to inspire your tastebuds, visit www.americanpistachios.org.

1. Rock, C. L., Zunshine, E., Nguyen, H. T., Perez, A. O., Zoumas, C., Pakiz, B., & White, M. M. (2020). Effects of Pistachio Consumption in a Behavioral Weight Loss Intervention on Weight Change, Cardiometabolic Factors, and Dietary Intake. *Nutrients*, 12(7), 2155 . **2.** Ibarrola-Jurado, N., Bulló, M., Guasch-Ferré, M., Ros, E., Martínez-González, M. A., Corella, D., Fiol, M., Wärnberg, J., Estruch, R., Román, P., Arós, F., Vinyoles, E., Serra-Majem, L., Pintó, X., Covas, M. I., Basora, J., Salas-Salvadó, J., & PREDIMED Study Investigators (2013). Cross-sectional assessment of nut consumption and obesity, metabolic syndrome and other cardiometabolic risk factors: the PREDIMED study. *PloS One*, 8(2), e57367. **3.** Sumislawski, K., Widmer, A., Suro, R. R., Robles, M. E., Lillegard, K., Olson, D., Koethe, J. R., & Silver, H. J. (2023). Consumption of Tree Nuts as Snacks Reduces Metabolic Syndrome Risk in Young Adults: A Randomized Trial. *Nutrients*, 15(24), 5051.

Chilean Walnut Planted Area Update and 2024 Crop Situation

Several of Chile's walnut-producing regions have seen a decrease in planted area in recent years, largely as a result of water shortages. Growers face a complex production scenario for the 2024 season, with adverse weather conditions driving the crop forecast down by 8% from last year.

Chile's Natural Resource Information Center (CIREN) presented the result of the latest agricultural surveys conducted in the Valparaíso and Metropolitan regions, two of the main production areas for Chilean walnuts. Between the two regions, there has been a reduction of 1,606 hectares since the last survey in 2020. Valparaíso showed a decrease of 697 hectares, or 9.9% less than the previous survey, while Metropolitan reported a decrease of 909 ha, a reduction of 5.5% compared to the previous survey.

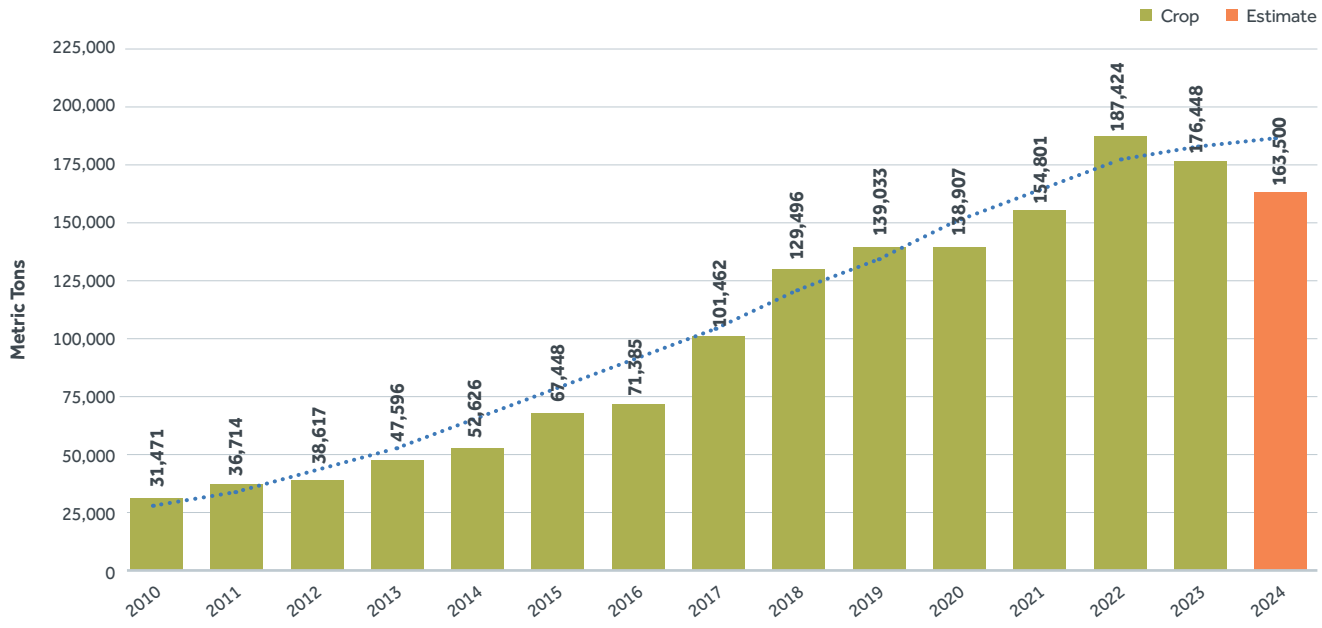
Although no official information is available, expert opinions indicate that the Region of Coquimbo, the northernmost producing region, is also experiencing a massive reduction in planted area caused primarily by the water crisis that the region has experienced for over a decade. Chilenut is monitoring this through a local survey that is still underway.

In addition, weather conditions have been adverse at both the national and regional levels:

- Warm winter affected the accumulation of cold hours at the national level. Some affected areas have had 50% fewer cold hours than in regular years. Chilenut has developed a regional report on this subject.
- The southern region is affected by low fruit set in many sectors.
- There is a water crisis in most regions, but especially in the northern regions.

Given this information, Chile is facing a complex production scenario for the 2024 season. Between the reduction in planted area and the adverse weather conditions, it is expected that this year's crop will be around 8% smaller than the previous one, amounting to a total production of 163,500 metric tons. Chilenut is monitoring the situation and will continue to update the figures as harvest time approaches.

Evolution of Chilean Walnut Production, In-shell Basis



A Handful of Nuts Could Save Australian Public Health AU$980 Million Every Year

Image courtesy of Nuts for Life.

First-of-its-kind economic modelling, conducted by KPMG Australia for Nuts for Life, found at least AU$980 million could be saved in health care expenditure annually if every Australian were to eat a daily 30 g handful of nuts. Why 30 g per day? Scientific research suggests that this target intake can favourably impact health.

The body of evidence shows that nuts are a key food within healthy dietary patterns, with an impressive range of health benefits. But the potential economic benefits of greater nut consumption in Australia had not been investigated.

In July 2023, Nuts for Life commissioned KPMG to explore this.

Cardiovascular disease (CVD) and cancer were selected as the disease groups of most relevance for the economic modelling analysis. This was due to their impact on population health, cost to health care in Australia, and the potential for increased nut consumption, within the context of a healthy diet, to favourably impact these conditions.

> *"A significant gap exists in Australia between the actual (average) nut intake of 4.6 g per day and the target of 30 g per day."*

The economic analysis found that if all Australians increased their nut consumption to 30 g per day, the potential estimated health care expenditure savings could be:

- Total health care*: >AU$980 million/year
- Cancer (all types): AU$699 million/year
- Cardiovascular disease: AU$281 million/year

The findings show the benefits of regular nut consumption extend beyond health. But a substantial shift in nut consumption patterns is needed in Australia to realise the major health AND economic benefits of a daily 30 g handful of nuts.

Access the Summary Report: https://www.nutsforlife.com.au/resource/a-daily-handful-of-nuts-could-save-public-health-980-million-every-year/

PhD Project Update: Investigating the 'Available' Energy in Nuts

In March 2021, Nuts for Life sponsored a PhD project with the University of Wollongong to investigate the available energy in nuts and determine how this impacts an adult's energy intake, as well as the impact of updated labelling on nut consumption.

The research was divided into three stages, with the final phase of the project —exploring the perceptions and impact of a potential labelling change— now complete. This phase was conducted using both qualitative and quantitative research amongst key stakeholders, including health professionals, nut growers and consumers.

Planning is now underway to determine how the findings of this research could influence a policy change for energy labelling of nuts.

Learn more: https://www.nutsforlife.com.au/resource/are-all-kilojoules-in-nuts-absorbed/

For further information on Nuts for Life activities, visit www.nutsforlife.com.au or contact:
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Maree Hall, Digital and Communications Manager,
maree.hall@nutsforlife.com.au
Or follow Nuts for Life on LinkedIn: https://www.linkedin.com/company/nuts-for-life

*This figure considers the combined savings from cancer and CVD only, so the health care savings could be much greater if other conditions were to be considered.

California Walnuts Fulfilling Consumer Expectations

Photo courtesy of California Walnut Board & Commission.

California walnuts are in high demand, fulfilling consumer expectations for flavorful, premium-quality walnuts. Through January, shipments to overseas markets have increased by 17% and domestic shipments have increased by 16%.

"The fresh California crop of premium-quality walnuts is being well received by our trade partners and consumers are responding with retail sales increasing across all major markets," stated Robert Verloop, CEO of the California Walnut Commission (CWC). "We're looking forward to building new partnerships with retailers in the US and abroad to expand consumer desire to purchase California Walnuts throughout the year. We are also seeing increased interest in new product development, which will provide consumers new ways to consume our nuts throughout the day. Over time, this will help to put supply and demand back in balance, which has driven prices to historical lows that are not sustainable for our family farms."

> *"Research has shown that there is tremendous opportunity to expand distribution of California walnuts in the produce section."*

Throughout the critical holiday seasons around the globe, the CWC continued building partnerships with retailers in the US and abroad. The versatility of walnuts allows them to be merchandised across baking aisles, produce departments and snacking areas in grocery stores. Research has shown that there is tremendous opportunity to expand distribution of California walnuts in the produce section, highlighting their complementary attributes to fruits and vegetables, as 76% of shoppers are more likely to purchase walnuts when displayed next to fruits and vegetables.[1]

"As a leader in innovation and demand creation, California Walnuts will continue to invest in marketing programs with strategic partners," stated Pamela Graviet, Vice President Integrated Marketing. "Over the past 35 years, our programs have been instrumental in creating the demand that has grown our industry into what it is today, and we are excited about the future."

The CWC continues to work with US government officials to tackle the challenges of tariff and non-tariff issues that ultimately affect consumer prices and stifle growth for our trade partners.

Looking ahead, this winter has provided prolonged heavy rains in the California walnut growing regions, further restoring deep soil moisture for healthy root zones and enabling trees to better tolerate late-season high temperatures. Continued development of another extensive snowpack will provide all growing regions sufficient water to support the trees throughout the coming season.

1. California Walnuts Consumer A&U, October 2021.

California Prune Board Reinforces Its Commitment to Sustainability

California Prune growers blend modern-day innovation with heritage practices to deliver prunes that taste like no other on earth. In parallel, the industry is adding pace to sustainability initiatives, with growers committed to embedding sustainable practices across the state's orchards.

Photo: California Prune Board.

> *"The industry has implemented thoughtful and scientifically-based practices to help protect the environment while producing safe, nutritious prunes."*

To further underline its commitment to the environment, the California Prune Board (CPB) has joined the U.S. Sustainability Alliance (USSA). The member organization for US agriculture represents 25 farming, fishery and forestry organizations and supply chain partners, promoting sustainable US production practices and products to a global market.

The state's growers have embraced initiatives that conserve energy, reduce water use, and improve the safety and quality of prune production while ensuring longevity for the industry.

In a state known for drought, water conservation efforts are in effect across orchards, with precise micro-irrigation systems significantly reducing water usage. The work done by the Mariani family in Vacaville, for example, has saved more than eight million gallons thanks to the utilization of a water purification plant to recycle water waste for use in the orchards.

Renewable energy is also being utilized by handlers and growers like Sandra Mitchell of the Mitchell Ranch in Yuba City, who has invested in solar arrays to provide a major source of energy for the farm.

As part of efforts to maintain nutrient-dense soil and improve irrigation efficiency, some farmers are utilizing cover crops and other methods such as Marysville's Ranvir Singh, of Feather River Farms, where grasses are left to grow to help capture carbon and clean the air.

Soil health is also the focus of Yuba City's John Taylor, of Taylor Brothers Farms, who is focusing on improving prune tree health and productivity by injecting nitrogen and trialing beneficial bacteria in his soil.

Meanwhile, techniques to improve the ecosystem and habitats are being utilized widely across the orchards, including the positioning of owl boxes to encourage smart pest control.

Leadership in this area is an ongoing effort and the CPB has implemented a Life Cycle Assessment (LCA) for the industry to understand the full environmental impacts and benefits of perennial agroecosystems as well as improvements over time. The findings from the UC Davis LCA will ultimately provide a baseline measurement for growers and handlers to continually improve their practices and contribute to a better environment.

Esther Ritson-Elliott, Director of International Marketing and Communications at the California Prune Board, explains: "As part of strides towards sustainability, California Prune growers and handlers invest in orchard management and research that demonstrates their commitment to the planet, and the communities in which farmers operate and serve.

"The industry has implemented thoughtful and scientifically-based practices to help protect the environment while producing safe, nutritious prunes. Now, as part of the U.S. Sustainability Alliance, we aim to continue to share our knowledge and practices with our fellow members while promoting California Prunes' sustainability initiatives to a global audience."

For more information about the California Prune industry's sustainability practices, visit https://californiaprunes.org/california-prunes-101/sustainability/

News From the INC Nutrition Research & Education Foundation (INC NREF)

MAUREEN TERNUS, M.S., R.D.N.

Executive Director

A recent INC NREF-funded study published online in the journal *Nutrients*[1] suggests daily tree nut consumption reduces the risk of metabolic syndrome (MetSx) by improving waist circumference, lipid biomarkers, and/or insulin levels, without requiring calorie restriction, in young adults.

Photo: INC NREF.

"A new study finds that daily tree nut consumption reduces the risk of metabolic syndrome in young adults without requiring calorie restriction."

In a randomized-design study, researchers at Vanderbilt University Medical Center enrolled 84 men and women, ages 22-36, most of whom were either overweight or obese and had at least one MetSx risk factor at baseline (abdominal obesity, elevated triglycerides, low HDL ("good") cholesterol, high blood pressure or elevated levels of blood glucose). Participants consumed either one ounce of mixed unsalted tree nuts or one ounce of a carbohydrate-rich snack twice daily. Both snacks provided the same number of calories, protein, fiber and sodium and were part of a 7-day eucaloric weight maintenance menu that repeated throughout the study duration of 16 weeks.

The results showed females who consumed tree nut snacks had a reduced waist circumference and a trend toward reduced visceral (intra-abdominal) fat compared to those consuming carbohydrate snacks. Males who consumed tree nuts snacks had decreased blood insulin levels. Both males and females consuming tree nut snacks saw an effect on triglycerides (TG) and TG/HDL ratios, with TG/HDL ratios reduced ~11% compared to those consuming carbohydrate snacks.

"When we assessed the effect of tree nut snacks on individual MetSx scores," said Principal Investigator Heidi J. Silver, R.D., M.S., Ph.D., Research Professor of Medicine at Vanderbilt University Medical Center, "we observed a 67% reduction in MetSx score in females and a 42% reduction in MetSx score in males."

Overall prevalence of MetSx, which increases risk for diabetes and cardiovascular diseases, has increased to 21.3% among healthy American young adults aged 20-39 years.[2] "We know that snacking contributes almost 25% of total daily calories in young adults in the U.S.," explained Dr. Silver. "Substituting typical high-carbohydrate snacks with tree nuts would likely have a positive impact in reducing the risk of metabolic syndrome and its consequences in this age group."

Previous research has shown the beneficial effects of tree nuts in helping to reduce the risk of several chronic diseases including overweight/obesity, diabetes and heart disease. With MetSx and its various risk factors on the rise worldwide, this is yet another reason to include tree nuts in the diet.

For more information on this study and any other INC NREF project, please contact Maureen Ternus at maureen.ternus@nuthealth.org.

1. Sumislawski, K., Widmer, A., Suro, R. R., Robles, M. E., Lillegard, K., Olson, D., Koethe, J. R., & Silver, H. J. (2023). Consumption of Tree Nuts as Snacks Reduces Metabolic Syndrome Risk in Young Adults: A Randomized Trial. *Nutrients*, 15(24), 5051. https://doi.org/10.3390/nu15245051

2. Hirode, G., & Wong, R. J. (2020). Trends in the Prevalence of Metabolic Syndrome in the United States, 2011-2016. *JAMA*, 323(24), 2526–2528. https://doi.org/10.1001/jama.2020.4501

Beyond Pecan Pie

ANNE WARDEN
CEO, American Pecan Promotion Board and American Pecan Council

The pecan industry has new resources and new drive to capture consumer awareness.

The pecan industry is gearing up for a breakout. Growers, shellers and other stakeholders in the industry are working together in a coordinated marketing push to increase demand and sales of America's only native tree nut.

The American Pecan Promotion Board (APPB) is in year 3 of its existence, a new federal research and promotion order funded by US pecan producers and importers. With new resources driving these efforts, the APPB, along with the American Pecan Council (APC), is launching a plan to address the biggest needs of the industry today.

"It says a lot that so many pecan stakeholders were able to recognize a need and come together with a common vision," said Deborah Walden-Ralls, Arizona grower and chair of APPB. "We've already started moving on these efforts, but the next year is going to be our strongest push yet, working on multiple fronts to make pecans a larger part of the conversation in the US and abroad."

APPB and APC are currently crisscrossing the country, getting feedback from growers on the plan, particularly in the following key areas:

Surprising Health Benefits: Pecans are a nutrient-dense superfood, yet most consumers don't know them beyond pies and confections. APPB aims to change that. A handful of pecans (about 19 halves) provides a good source of fiber, thiamin and zinc, and is an excellent source of copper and manganese. This makes them a natural fit for the way consumers eat today. They also have antioxidants like provitamin A (8 mcg) and gamma-tocopherols (7 mg), a form of vitamin E.

Beyond Holiday Pies: Everyone knows pecans are a staple of the holiday season in the US. But post-holidays, consumer demand dips. The industry is leaning into pushing the benefits of pecans year-round, through new uses in meal occasions like breakfast and snacking for health-conscious consumers who don't want to sacrifice taste.

Widening Exports: As the world increasingly craves more nuts, the export market potential is enormous. Recently, the APC hosted Indian nut importers who met growers coast to coast and saw the potential uses for pecans. The industry is going to keep its foot on the accelerator to build consumer demand in India while also continuing to push for increased consumption in Europe and Asia.

Photo: American Pecan Promotion Board.

With efforts on multiple fronts, the pecan industry's value chain is more united than ever before in their commitment to growth.

"Pecans are a nut to watch," said Larry Don Womack, Texas grower and APC chair. "We're ready to prove what a strong, coordinated industry can accomplish."

> *"With efforts on multiple fronts, the pecan industry's value chain is more united than ever before in their commitment to growth."*

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