



AUSTRALIAN
MACADAMIAS

2022 YEARBOOK



YEAR OF UNPRECEDENTED ADVERSITY REVEALS INDUSTRY'S DEEP RESILIENCE

To achieve success in any agricultural endeavour requires a certain kind of strength, and 2022 has served as a reminder of the grit and determination that lies at the heart of Australia's macadamia industry.



Even the most seasoned industry members are struggling to recall a year so beset by challenges, from the ongoing disruption of the pandemic to supply changes, pricing pressures, rising costs and devastating weather events.

At times, the challenges have felt relentless. However the incredible resilience shown by the industry's people, in particular those growers impacted by the unprecedented floods on the NSW North Coast and South East Queensland, has been inspiring. The speed with which they returned to their orchards to continue with harvest was phenomenal, especially given that many were dealing with substantial losses and damage to homes, equipment, trees and infrastructure. Thanks to their incredible efforts, the industry is back on track and set to deliver a crop only 10% short of pre-flood estimates. This is an impressive result given the extent of the devastation caused.

While it has been a testing year, there have been exciting highlights too. Fortunately the largest macadamia producing region of Bundaberg, which accounts for around 46% of Australia's crop, was not impacted by the severe weather. It has enjoyed a very strong season and generally crop yields across Queensland have increased.

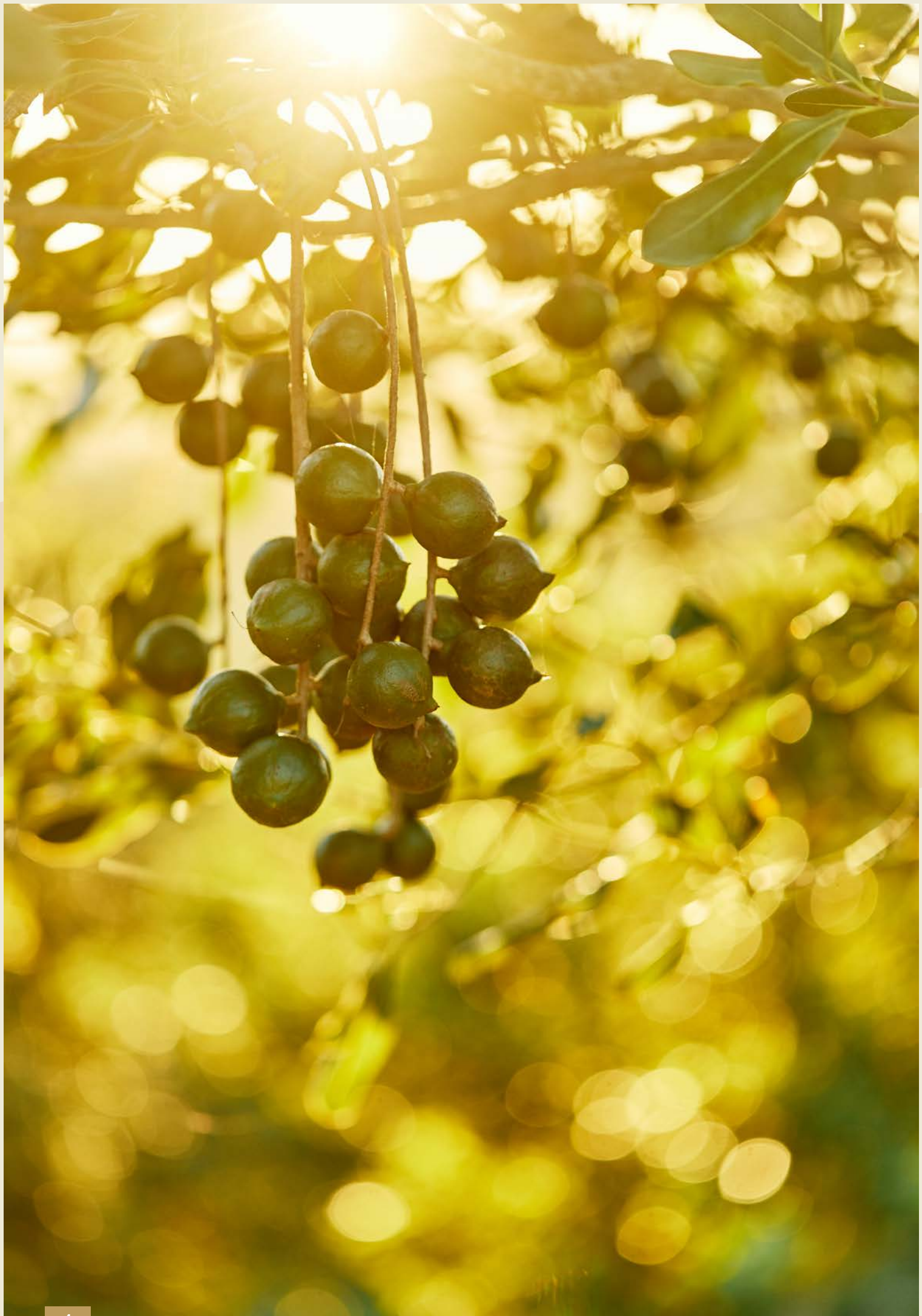


2022 also saw the launch of the inaugural Women in Macadamias events in all major growing regions. It was the first time women in the Australian macadamia industry had come together in such a forum and it shone a light on several issues that women face, including a reluctance to ask questions, loneliness on farm, and a lack of confidence when it comes to safely operating and maintaining larger pieces of machinery. The initiative is part of a commitment to creating an environment that encourages women's participation in industry and decision making at all levels.

The industry's international marketing program has continued at full pace throughout 2022, with consumer and trade campaigns active in Australia, China, Japan, Taiwan and South Korea. Audiences have grown across key marketing channels enabling more consumers to discover the multi-layered macadamia story and helping the manufacturing sector to understand the health halo, taste, texture and indulgence cues that macadamias can bring to food and beverage products.

The biggest opportunities for the Australian industry continue to lie in the growth of the industry at a global level. Australia is perfectly positioned to play a leading role in this expansion and is proud to be collaborating with other origins via the World Macadamia Organisation (WMO) to drive international demand. Australia's marketing program has historically done much of the 'heavy lifting' of promoting the many benefits that macadamias can offer both consumers and manufacturers. With the WMO now executing origin-neutral consumer campaigns in key markets, this frees our industry to tell the story of why Australian grown macadamias are among the world's best.





AUSTRALIA'S MACADAMIA INDUSTRY IN NUMBERS



\$201M_{AUD}

Farm-gate value



800

Growers



+\$994M_{AUD}

Retail value



\$2.5M_{AUD}

Annual investment
in Marketing



79%

Production processed
and sold as kernel



48,000T

5-year average in-shell production
at 3.5% moisture (51,600T at 10%)



\$5M_{AUD}

Annual investment in Research
& Development
(Levy plus other investment estimate)



80%

Production exported



38,000Ha

Under planting
Of this, 26,600ha is
currently bearing



46,000Ha

Under planting by 2025



70,000T

Target in-shell production at
3.5% moisture by 2025
(75,000T at 10%)

INVESTING IN THE FUTURE: A SUSTAINABLE APPROACH TO PRODUCTIVITY IMPROVEMENT

A commitment to continual learning and improvement is one of the cornerstones of the Australian macadamia industry. This is evident in on-farm practices, post-harvesting processes, and the premium quality of the end product.

A collaborative spirit and innovative thinking are the driving forces behind an industry-wide desire to achieve consistent production, high quality and long-term sustainability. And with shoppers more conscious than ever about the source and safety of food product ingredients, delivering a pure and premium product that meets the expectations of manufacturers and consumers alike is paramount.

SUSTAINABLE PRODUCTIVITY GAINS

Advances made by Australia's macadamia industry over the last decade have been driven largely by long-term investment in productivity improvements. Growers have adopted new industry-wide productivity initiatives which are delivering better soil and tree health and more consistent yields. The best growers are continuing to push productivity barriers, with some now consistently achieving more than five tonnes in shell per hectare.

As growing and orchard management practices have become more advanced, so too has understanding of the environment and how it is changing. Macadamia growers remain committed to conserving the natural resources on which their product relies, and in 2022 this has seen many Queensland growers investing substantially on farm to enhance water quality as a Great Barrier Reef protection measure.

In 2022, growers continued to adopt the latest environmental monitoring capabilities, optimise their use of technology and create greater orchard biodiversity. A raft of measures have been embraced that are driving productivity to help meet growing demand for macadamias, and prioritising the protection of the water, soil, air, native vegetation and wildlife.

WORKING WITH NATURE FOR A RELIABLE CROP

Australia's macadamia industry sees no trade-off between sustainable growing practices and productivity. In fact, it's quite the opposite. Growers see sustainability working hand in hand with productivity, and this is driving innovative thinking on-farm, increased biodiversity, and development of effective biological controls.

The industry works with nature to achieve the best results. Macadamia trees are grown in the locations where they naturally evolved, meaning it is a crop that has naturally adapted to its environment. This natural advantage and inherent resilience forms the foundation on which the industry's growth is built.

Many growers have created pest suppressive landscapes in their orchards, increasing biodiversity to bring balance to the natural environment and allowing beneficial insects that suppress harmful pests to thrive. This is achieved by planting diverse species around the macadamia trees and actively sowing inter-rows between tree rows with a host of different vegetation including grasses, legumes and brassicas, as well as floral coverage to encourage natural pollinators.



FARMING FOR A SUSTAINABLE FUTURE

Australia is recognised internationally as a clean, green and reliable food producer. Our macadamia industry has developed over five decades on the same fertile soil where the world's first macadamia trees evolved more than 60 million years ago. Quality is at the heart of the Australian macadamia industry, but the way we achieve this is just as important.

Australian macadamia growers are deeply committed to sustainable production and believe the actions they take on-farm today must benefit the environment and people in the future. Many are champions of regenerative agriculture and are leading the way in terms of on-farm innovation to better protect the soil and promote biodiversity.

Feeling a true affinity for the land on which they farm, Australian macadamia growers take great care to develop and implement ecologically sensitive techniques to protect the natural environment. Our industry invests millions of dollars in research every year to ensure our practices are the world's best and that the natural resources on which our industry relies to grow this delicious wholefood are managed as efficiently as possible.

RISING TO THE DEMAND FOR SUSTAINABLY PRODUCED INGREDIENTS

Today's consumers are not only seeking food and beverage products that deliver on quality, taste and health, but also sustainability, ethical practices and transparency.

Sustainability considerations are increasingly driving consumer purchasing patterns, with almost 70% saying they feel happy when they do things that benefit the environment¹. For many, this means choosing sustainably produced food products, even if those choices attract a price premium.

Concerns over the environmental impacts of meat production are driving surging interest in plant-based eating and between 2021 and 2022, the proportion of consumers globally who eat meat most days has fallen from 33% to 28%¹.

Manufacturers already understand the taste, texture, health, luxury and plant-based cues macadamias can add to products. Macadamias grown in Australia deliver powerful, research-backed sustainability credentials too, from water use efficiency and carbon sequestration to minimisation of carbon outputs, recycling of by-products and world's best biological control.

A FRAMEWORK FOR THE FUTURE

In the globalised supply chain, consumers are showing an increasing interest in understanding more about where their food comes from and how products are produced. Similarly, supply chain companies and their shareholders, markets and investors are seeking evidence of high standards of product safety, workplace ethics and environmental care.

Hort Innovation has released the Australian-grown Horticulture Sustainability Framework, a guide to help the horticulture sector share its sustainable, ethical, and safe farming practice stories with stakeholders. The Australian macadamia industry has started using this to develop its own industry approach.

The Australian-grown horticulture sustainability framework provides a logical process to measure how Australian horticulture is tracking on key sustainability issues. With this information, Australian horticulture, its industries and businesses can:

- Tell their story of sustainable production
- Protect and grow access to investment and finance
- Target research to improve practice
- Work together on common challenges across the sector
- Measure and track progress to sustainability
- Work towards safe, ethical, and sustainable production practices
- Strengthen relationships and transparency with stakeholders



¹ Mintel Consulting / Richard Cope, Mintel Sustainability Barometer 2022

MAPPING ADVANCES CONTINUE TO PROVE INVALUABLE

Significant effort has been invested in macadamia orchard mapping and it has proven to be an invaluable crisis management tool.

When the 2019/2020 bushfires hit, the fires were mapped and then overlaid with macadamia maps, helping to identify those most at-risk orchards and manage the natural disaster as it unfolded. In 2022, mapping of storm and flood damage helped to determine the extent of the damage and informed disaster response plans.

Known as 'remote sensing', mapping is an agricultural tool that has been introduced to macadamia growing and it's playing a crucial role in better understanding crop forecasting, orchard health and productivity improvements. It's also an important futureproofing tool, helping to ensure resilience in the event of a biosecurity threat, and identifying and recording the locations of wild macadamia species.

USING R&D TO FORCE NEW PATHS

Australia's macadamia industry leads the world in terms of on-farm research and development. Three decades of commitment to R&D has laid the foundation for growers to develop practical solutions that ensure consistent supply of premium quality macadamias.

The industry now invests over \$5 million in R&D annually through levy and other industry and research agency investments. Recent years have seen a surge in grower-led innovation as well, with many growers investing in their own trials and implementing innovative new practices on farm as a result. Adoption of new technology, enviro-monitoring and more efficient, targeted and precise irrigation scheduling are paving the way for continued long-term growth in Australian macadamia production.

2022 saw new research investments made in the following areas:

- Integrated pest management*
- Integrated disease management*
- A new benchmarking project which includes a sustainability pilot*
- Multiple water quality projects including reef certifications and marine estuary health

**These research projects have been funded by Hort Innovation, using the macadamia research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture.*

These important investments will help to improve productivity while aligning with environmental stewardship and sustainable practices.

Several innovation projects were ongoing in 2022, including the Hort Frontiers-funded Tree Intensification initiative that aims to boost crop yield per hectare, advances in pollination, and a 20-year breeding program that will see trees bred for better yields, higher pest and disease resistance and more manageable canopies.

Advances in pollination brought about by improved understanding of its importance and of which insects pollinate most effectively has resulted in cross-pollination becoming a significant consideration when planting new orchards. The Hort Frontiers Pollination Fund covers multiple crops including macadamias, and this has seen many growers adopting pollination services and redesigning their orchard landscapes to create a safe harbour for natural pollinators. Pollination contributes to greater yields and better kernel recovery, again proving that working with nature is often the best strategy.





PRECISION AGRICULTURE

Mapping tools, weather stations and soil moisture probes are informing orchard operations and helping to improve efficiency of water use on farm.



INTEGRATED ORCHARD MANAGEMENT

Integrated management of canopy, orchard floor and drainage.

● CANOPY

Light and ventilation in the orchard improves productivity but also supports biodiversity - the beneficial insects and birds that keep pests at bay thrive in these conditions.

● ORCHARD FLOOR

Creating organically rich and healthy soil that is cover cropped and adequately moist.

● DRAINAGE

Keeping precious soil where it's meant to be and keeping orchards resilient to adverse conditions.



INTEGRATED PEST AND DISEASE MANAGEMENT

Combining a range of strategies including biological controls and cultural farm practices, IPDM continues to be a significant investment for the industry. By creating a pest suppressive landscape and monitoring and understanding pest lifecycles, growers can better discern when intervention is needed.



BIOLOGICAL CONTROL AND DIVERSITY

Collaborative research examining biological control is currently being undertaken by multiple research agencies. This will build on the industry's use of naturally occurring organisms to control pests and disease. Orchards are now boasting more diversity than ever, with many growers establishing inter-rows in their orchards to create habitats for beneficial insects, native bees and other pollinators such as flies and beetles. This is delivering production benefits as well as a more sustainable way of growing.



IMPROVED SOIL EROSION MANAGEMENT

Significant work has been undertaken to better mitigate soil erosion using whole farm planning and re-contouring that helps to balance nutrients, prevent nutrient run-off, and monitor and manage water quality. The use of cover crops plays an important role in this area, encouraging beneficial insects while retaining soil and moisture levels.



REVEGETATION AND RESTORATION OF RIPARIAN ZONES

Riparian zones are extremely sensitive to any activity occurring in and around them, with careful management required to ensure no adverse impact on the waterways. The industry is restoring these precious zones and planting more vegetation to control erosion and create a naturally pest-suppressive landscape.



INCREASE IN USE OF BOTH EUROPEAN AND NATIVE BEES

Insect pollination by both managed and naturally occurring bees and other insects are beneficial to the crop.



INCREASED USE OF TREE SHAKERS

Many bearing orchards in Australia's largest growing region of Bundaberg have now adopted tree shaking technology and uptake is expanding to other regions too. Delivering improved harvest efficiency and quality by providing access to every single nut grown, tree shaking also provides the orchard with the chance to 'reset' by removing nuts that may otherwise support pests and diseases, and physiologically preparing the tree for the next season.



NOTHING WASTED

100% of the harvested nut is used, with nothing going to waste. The husk is used as mulch and compost and the shell is used for co-generation of electricity in macadamia processing plants. Biochar is the result of burning macadamia shells at a high temperature in a special, low oxygen environment. Used as a soil enhancer, it makes soils more fertile and stores carbon in the soil so it's not released as a greenhouse gas. Biochar production creates oil and gas by-products that can be used as fuel for renewable energy plants.



BREEDING PROGRAMS

Macadamias are part of some long term breeding programs that capitalise on the selection of natural favourable characteristics, not genetic modification. The MCT1 macadamia variety was produced following a long breeding history and testing in multiple regions. It has gone on to become one of the most sought-after varieties in the industry. The levy-funded breeding program has produced four elite varieties which are starting to be planted more widely. It is anticipated these could be game-changing for productivity.

SERIOUS ABOUT SAFETY AND QUALITY

Food safety is a top priority for Australia's macadamia industry. Its approach is underpinned by sophisticated production processes, generations of knowledge about quality on farm and in factory, a commitment to biological pest control, and Australia's reputation as a clean and green environment. Australia was the first macadamia producer to implement rigorous quality standards and testing protocols that remain unmatched by any other producing region. All processors are HACCP accredited and most have additional quality management systems.

Australia's macadamia industry is active in the food safety space internationally as well, particularly in relation to post-harvest handling. Its strong record has led to other origins seeking out Australian processors to handle their product, meaning the food safety and quality standards enjoyed in Australia are now extending to other origins too.

Australia's standing as the producer of premium quality macadamias is validated by the results of the Australian Government's National Residue Survey, a program that screens Australian crops for a range of chemical pesticides and environmental contaminants. In 2022 Australian macadamias achieved 100% compliance in the NRS for the 25th consecutive year – a record unmatched by any other Australian fresh product.

CONSERVING THE PAST TO SECURE THE FUTURE

As with many crop industries, the macadamia industry is based on a small number of tree varieties, selected for their favourable characteristics, such as plentiful crops and kernel quality. What makes macadamias different is that while most horticultural food products have undergone tens, if not hundreds of generations of breeding to produce the crops that we consume today, macadamias are still relatively new and little more than three generations separated from wild trees.





Image courtesy of Brookfarm

THE MACADAMIA CONSERVATION TRUST

In order to secure the industry's future, it's important to preserve the past. Wild macadamias offer a wealth of genetic diversity - a living gene bank. Many of the commercially grown macadamia varieties the industry relies on today are from a very narrow genetic base. This means the rest of the DNA from all the other wild macadamias has untapped potential for development of the international macadamia industry. As the only home of wild macadamia trees, Australia is the guardian of this diversity.

The Australian Macadamia Society (AMS) established the Macadamia Conservation Trust (MCT), a not-for-profit environmental organisation that aims to conserve remaining wild macadamia trees in their native habitat for future generations. The AMS is the only industry body in Australia to fund conservation of the wild species on which its industry is based.

Support for the Trust is a reflection of how seriously the industry takes its environmental responsibilities and its passion for conservation, research and education – all of which are vital for the ongoing successful future of the macadamia industry.

This year, the Trust continued its work to preserve a sample of wild tree genetics in the Wild Macadamia Arboretum. It is a slow and careful process to locate the trees, get permission to collect from them and successfully strike cuttings. A research project to assess the geographic distribution of wild genetic diversity has been completed and now informs the selection of trees to include in the Arboretum.

Another research project is looking at the challenges of long-term storage of macadamia reproductive material. Unlike wheat and rice, macadamia seeds are too large and oily to store long-term, so the project will experiment with preserving shoot tips that can be held in frozen storage and then extracted and grown into a new plant.

The Trust's website now links to a Wild Macadamia App created by the University of New England's Applied Agricultural Remote Sensing Centre. The app shows where the different species of wild macadamia have been surveyed. At one of these locations, in Amamoor State Forest in the Noosa Hinterland, the Trust worked with Queensland National Parks and Wildlife to develop a "Walk with Wild Macadamias". This new tourist attraction launched in 2022 attracting strong attention from both the media and the general public. The signposted rainforest walk enables people to experience macadamias growing in their natural habitat.



WILD MACADAMIA CHAMPIONS

The Trust now has a growing number of Wild Macadamia Champions and followers on Facebook. Community interest in Australia's role as guardian of wild macadamias and their habitat is increasing, and the new website gives people a chance to be involved in protecting these unique Australian species. More information is available at wildmacadamias.org.au

AUSTRALIAN MAJOR GROWING REGIONS

Macadamias are grown along the eastern coast of Australia from Nambucca Heads in the south to the Atherton Tablelands in the north. Collectively Bundaberg and the Northern Rivers region produce around 80% of the Australian crop.



PRODUCTION BY REGION DATA:

NORTHERN RIVERS	NAMBUCCA / YAMBA	SOUTH EAST QLD	GYMPIE	BUNDABERG	QLD TROPICAL
17,443	2,369	4,828	4,038	25,199	1,322
32%	4%	9%	7%	46%	2%

Table 1: Australian macadamia production by growing region for 2021 season. Tonnes in shell, 3.5% moisture content.

Source: Australian Macadamia Handlers Association

Australia is home to approximately 800 macadamia growers and has over 38,000 hectares planted.

Australia produced a crop of 51,500 tonnes in-shell at 3.5% moisture content for the 2021 season (March 2021 – February 2022). This represented a 10% increase on the 2020 crop. While the NSW growing regions were impacted by severe weather early in the season, most Queensland growers experienced a comparatively good season, with favourable weather and good harvest conditions.

Growers in South-East Queensland had a particularly good 2021 season with no adverse weather conditions, and they experienced higher yields than in 2020. In addition, the final crop figure was positively impacted by new plantings (predominantly in Bundaberg and the Clarence Valley) coming into production earlier than anticipated.

The 2022 season is expected to reach 49,340 tonnes in-shell @ 3.5% moisture content, a 4.3% reduction on last year. The crop was heavily impacted by severe weather and flooding in NSW and South-East Queensland, resulting in physical crop loss and delayed harvest. Growing regions affected by the severe weather in March include Glass House Mountains and Gympie in Queensland, and the Northern Rivers and Mid North Coast regions of NSW. The Northern Rivers region was the hardest hit, with many growers facing very challenging conditions for several months due to prolonged rainfall following two flooding events.

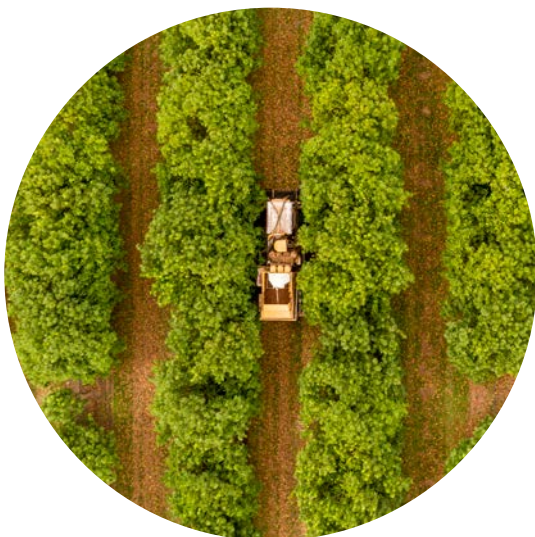
However, the largest macadamia producing region of Bundaberg was not impacted by the severe weather and should see an increase in crop given the new plantings in recent years in this region.



SEASON

The macadamia growing season can be broken down into three main periods:

August – September:	Flowering begins
October – January:	Nuts begin to form in clusters, their shells harden, and oil rapidly accumulates
February – August:	Mature nuts fall to the ground and are harvested with purpose-built harvesting machinery



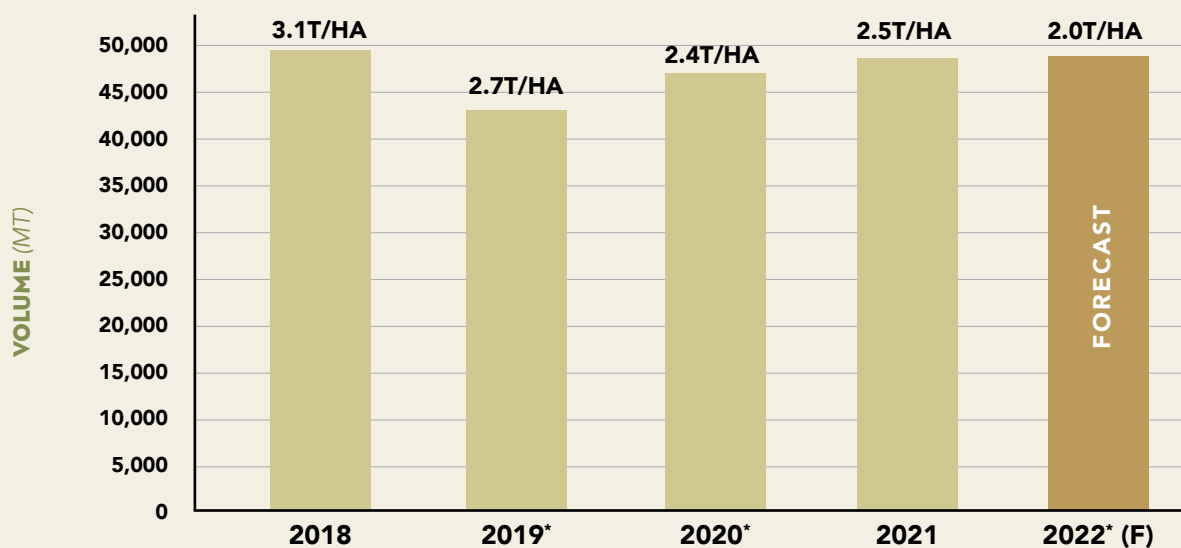
WEATHER CONDITIONS AND PRODUCTIVITY

2022 delivered extremely challenging weather conditions with record rainfall and flooding along the NSW Mid North Coast, Northern Rivers and South East Queensland.

While ongoing wet conditions in all major growing regions hampered harvest and orchard operations, dams and soil profiles have refilled, standing orchards in good stead heading into next season. However another La Niña event is predicted.

Orchards have proven to be remarkably resilient in the face of these extreme conditions and the long term investment in orchard floor management has helped most regions recover well from the excessive rain. The exception was orchards located in floodplain areas where damage was more severe. Recovery in these areas is taking longer, particularly in orchards with smaller trees.

FIGURE 1: AUSTRALIAN PRODUCTION VOLUME (IN SHELL, 3.5% MOISTURE)



*2019 and 2020 were impacted by drought. 2022 was affected by severe storms and flooding.

Source: Australian Macadamia Handlers Association (production volumes), Benchmarking report - Mature farms 10+ years (yields)

AUSTRALIAN INDUSTRY VALUE

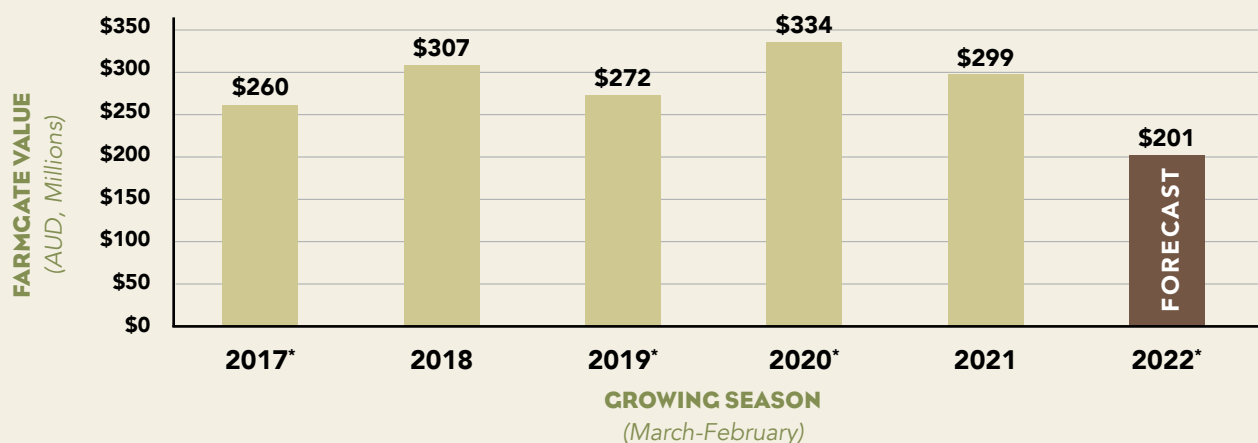
The Australian macadamia industry achieved a farm-gate value of \$299M in 2021, down from a high of \$334M the previous year. This translates to around AUD \$994M at retail.

The industry is experiencing difficult market conditions post Covid-19, with rapidly increasing global supply, intensified

price pressure in the ingredient market due to the impacts of extended shutdowns and travel restrictions, and ongoing challenges with the cost and complexity of the supply chain.

The current environment is expected to continue into 2023 and as a result, the 2022 farm-gate value is forecast to be \$201M.

FIGURE 2: AUSTRALIAN PRODUCTION VALUE



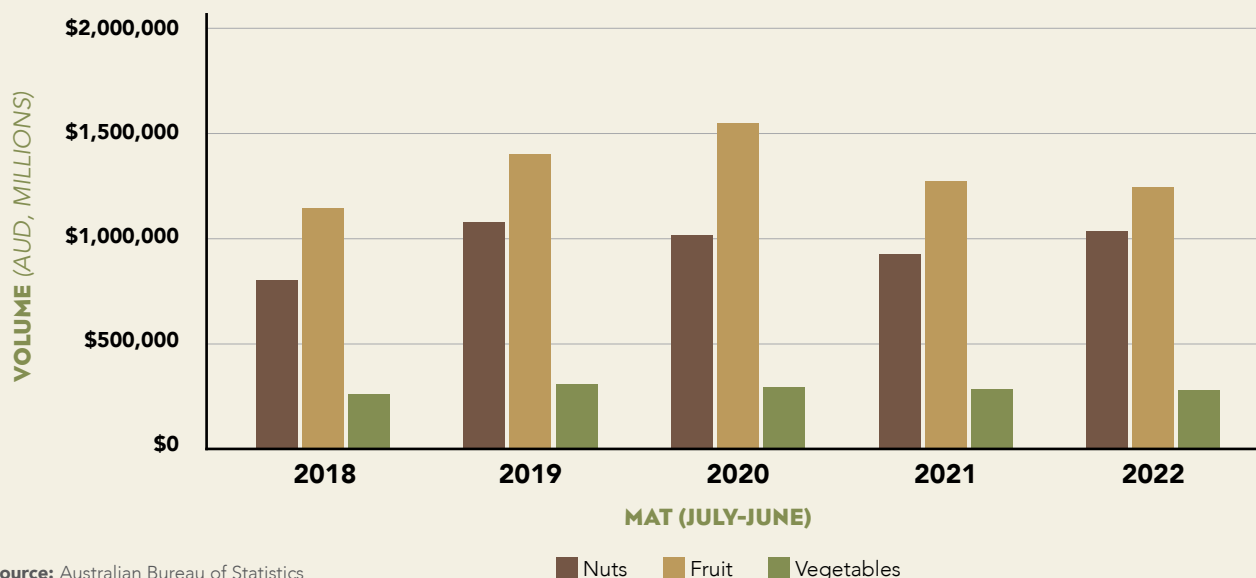
*2017, 2019, 2020 & 2022 were impacted by major weather events
Source: Australian Macadamia Handlers Association

AUSTRALIAN NUT INDUSTRY

Nuts play a vital role in Australia's horticultural export program, demonstrated by their export value of just over \$1 billion to 12 months to June 2022. Almonds and macadamias represent the vast majority of Australia's nut export value at 93%. Growth is being driven by an increasing health-conscious consumer mindset and rising consumption by emerging markets within Asia.

Australian nut producers have invested heavily in expanding output volume while maintaining an unwavering focus on quality. Export markets in Asia, Europe and the US recognise Australia as a source of premium quality product.

FIGURE 3: AUSTRALIAN HORTICULTURAL EXPORTS



Source: Australian Bureau of Statistics

GLOBAL TREE NUT PRODUCTION

In the 2021/2022 season, world tree nut production was forecast to reach 5 million metric tonnes (kernel equivalent), down 8% versus the prior season but well above the 2011/12 - 2019/20 volumes. In the ten years to 2021/22, tree nut production grew by 54%.

Almonds and walnuts were the largest crops in 2021/22, accounting for 32% and 19% of the global share, respectively, followed by cashews (17%), pistachios (15%), and hazelnuts (11%).

Source: INC

GLOBAL MACADAMIA PRODUCTION

Macadamias represent less than 2% of global tree nut production. Global macadamia production is on the rise, with established growing regions continuing to expand their plantings and emerging regions expected to feature significantly in future global production.

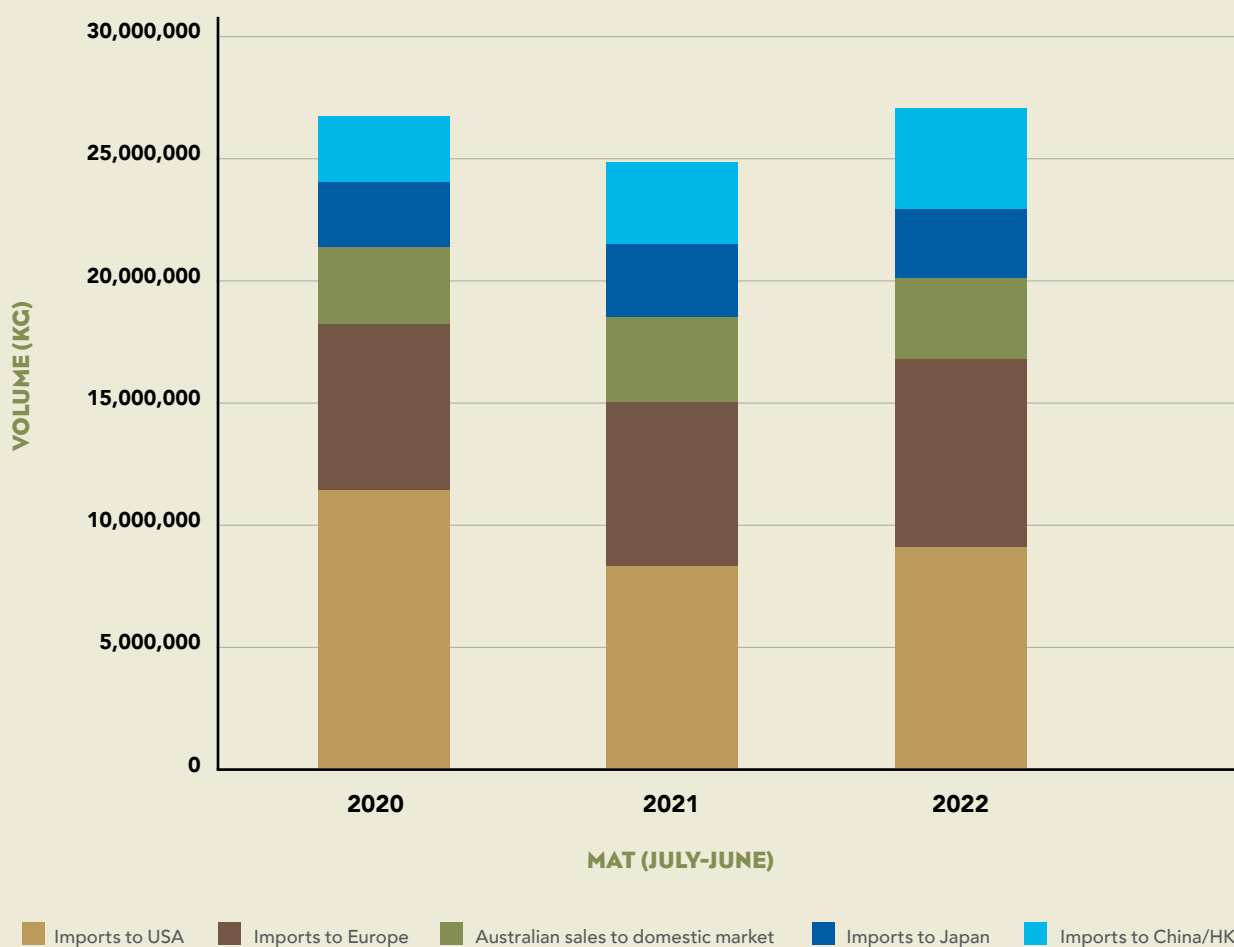
Production of macadamias is currently more evenly distributed than the major tree nut varieties, with no single producer representing more than 30% of production. However, this has not made the supply of macadamias immune to the effect of major weather events. The world's largest producers are South Africa and Australia, followed by China and Kenya.

MACADAMIA KERNEL IMPORTS

Global demand for total macadamia kernel imports improved in most key markets in the 12 months to June 2022, in particular China (+21%) and Europe (+16%).

Demand in the US market, while improving, remains at levels well below the last five years. As the largest global market for macadamia kernel, the slow return to previous demand is driving increased price competition, particularly in the ingredient styles.

FIGURE 4: MACADAMIA KERNEL IMPORTS/WHOLESALE SALES – TOP 5 COUNTRIES



Source: AMHA, USDA, Eurostat, Japan Customs, China Customs, Hong Kong Census & Statistics Department (all via IHS Markit Inc. except AMHA). July 2021 – June 2022.

WORLD MACADAMIA ORGANISATION CELEBRATES ITS FIRST YEAR

Global macadamia production is undergoing substantial change, with established producing origins continuing to expand plantings and emerging origins' crops set to make a mark on global production in the coming years. This shift has seen unprecedented international collaboration resulting in the formation of the World Macadamia Organisation (WMO) in 2021, with Australia proud to be a founding member, alongside Guatemala, Hawaii, Kenya, South Africa, Zimbabwe and Vietnam.

The WMO's mandate is to promote macadamias globally, to champion their lifestyle potential as an exceptional whole superfood and to stimulate growth in existing and untapped markets.

An independent not-for-profit organisation, the WMO has just completed its first year of operation, already achieving many accomplishments in its quest to drive demand by creating a greater understanding and appreciation of macadamias.



CHINA CAMPAIGN LAUNCH

The WMO's first ever marketing campaign entitled 'Open Together' targeted mainland China, with the initial activity timed for Chinese New Year. The campaign's focus was in-shell macadamia consumption and creating associations and rituals in family moments.

The centrepiece was a social video depicting a disconnected family coming together to enjoy the ritual of cracking and eating macadamias. It celebrates the sensory experience of cracking a macadamia and how this draws people together, from the satisfying crack of the shell breaking to the soft crunch and buttery mouthfeel that are the hallmarks of the macadamia's 'eat journey'. The campaign ran on Weibo, WeChat, TikTok and Little Red Book, and was supported by influencer marketing. The video has now amassed more than half a million views.



LOVE MACADAMIA™ CAMPAIGN LAUNCH

Launched in May 2022, the Love Macadamia™ campaign targets people who seek to enrich their lifestyle by positioning macadamias as a nutritious, delicious wholefood to elevate eating occasions. The campaign spans social and digital channels, including an immersive website, digital media presence and influencer partnerships to connect with the key target audience in an engaging and authentic way.

California was the initial focus, with other locations set to be added over time. It targets the early-adopting conscious consumer who cares about the world she lives in, what she eats and how she connects with others. She chooses foods that are both a joy to eat and deliver nutritionally.



FOOD TRENDS RESEARCH HELPS SHAPE INGREDIENT STRATEGY

In addition to consumer campaigns, the WMO is developing a trade marketing strategy to encourage food manufacturers in the plant-based space to embrace ingredient-style macadamias in their product formulations. A highly regarded food trends expert was commissioned to analyse where the biggest opportunities lie for macadamias in the ingredient market, with the resulting recommendations to be used by the WMO to shape its global strategy.

MACADAMIA PRODUCT STANDARD DEVELOPED

The WMO has launched a Macadamia Product Standard to help ensure more consistent product specifications for the commercial sector and define an optimal eating experience for consumers. All seven member countries were involved in the development of the Standard and it encompasses a host of specifications including nut-in-shell storage and handling, kernel classification and handling, product testing standards, and packaging and labelling specifications. The Standard will be reviewed annually.

To learn more head to WorldMacadamia.com

DISCOVER MACADAMIAS INTERNATIONAL MARKETING STRATEGY COMES TO COMPLETION

2022 saw the implementation of the final stages of the *Discover Macadamias* international marketing strategy. Commencing in 2020, the strategy's central goal was to continue the task of driving demand for macadamias among the food manufacturing sector. It comprised a host of carefully crafted activity that tells the story of Australian grown macadamias as a healthy, indulgent, whole plant-based food that meets the needs of today's conscious consumers.

THE 2022 TRADE CAMPAIGN DELIVERED A NUMBER OF HIGHLIGHTS:



HEALTH AND WELLBEING PR CAMPAIGN:

This was the final trade PR campaign to showcase findings of the *Discover Macadamias* global consumer research that surveyed more than 6,000 people across Australia, USA, Japan, China, South Korea and Taiwan. The campaign leveraged the finding that what has traditionally been one of macadamias' biggest barriers to consumption – their fat content – may in fact be one of their greatest strengths, presenting an opportunity for brands to rethink how macadamias stack up when it comes to health. The research revealed that more than 70% of consumers are seeking food and ingredients that deliver healthy fats to support heart health and 60% are seeking healthy fats for satiety, showing how far the consumer mindset has evolved when it comes to the role of good fats in their diets. The research also found that many people already recognise the link between macadamias and their healthy fat benefits, with 62% associating macadamias with feeling fuller for longer and 59% seeing macadamias as helping to promote heart health and reduce heart disease risk thanks to their high healthy fat content.



COMPELLING TRADE NEWS CONTENT:

A comprehensive schedule of trade news was published throughout 2022. Content covered a range of topics including product innovation, consumer insights, promotion highlights, health news, crop forecasts, and market reports. These stories ensure the trade is kept up to date with critical news and data and continues to tell the story of macadamias as a sought-after ingredient suited to a broad range of manufactured food and beverages. Published in five languages, the content is shared with a growing global database of trade EDM subscribers, on the Australian Macadamias trade website and on trade social media channels WeChat and LinkedIn.

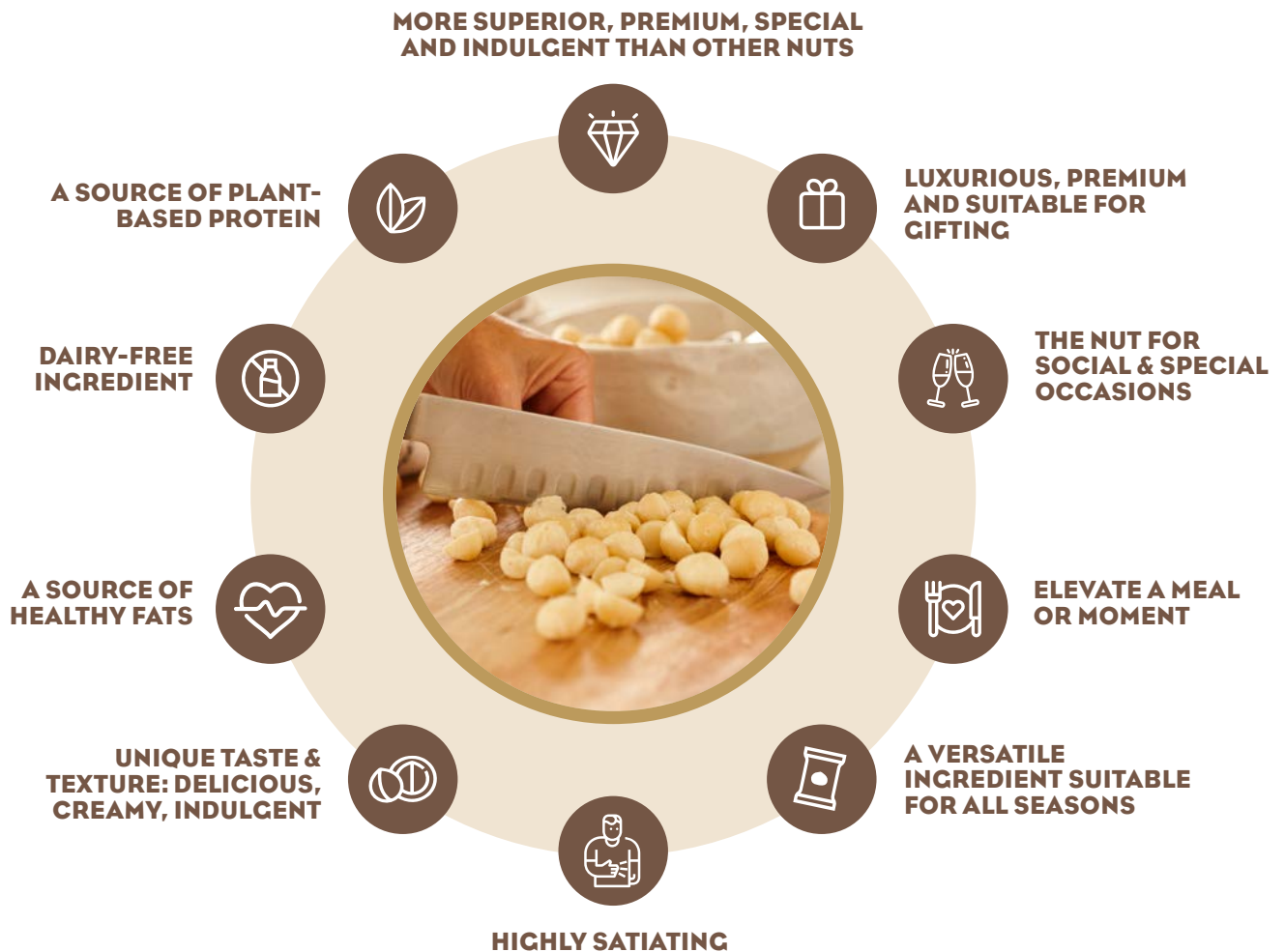


NEW CONSUMER INSIGHTS RESEARCH:

The Australian macadamia industry has a long-term commitment to consumer insights research to guide the development and implementation of marketing strategy. In preparation for the next phase of the industry's international marketing plan, new research was commissioned to discover how consumers in Australia and Asia feel about health, food, nuts, macadamias and Australia as a producing origin. The most compelling insights will help to shape a refreshed brand positioning to increase demand for Australian grown macadamias and help inspire new product innovation.

WHY DO CONSUMERS LOVE MACADAMIAS?

FROM THEIR EXQUISITELY CREAMY TASTE AND PERFECTLY ROUND FORM TO THEIR UNIQUE SOFT CRUNCH AND HEALTH BENEFITS, THERE'S A LOT TO LOVE ABOUT MACADAMIAS. THE AUSTRALIAN MACADAMIA INDUSTRY'S RESEARCH REVEALS A HOST OF REASONS THAT CONSUMERS CHOOSE MACADAMIAS.



GROWN IN TRUSTWORTHY ORIGINS

OVER 50%

of consumers nominated Australia as one of their top 3 preferred macadamia origins.

Australia is viewed very favourably by consumers for its unique and diverse environment, stringent quality standards, healthy lifestyle and people who want to connect with and support one another.

Sources:

Australian Macadamias qualitative consumer insights positioning research, FiftyFive5 research agency, June 2022
Discover Macadamias quantitative consumer insights research, Kantar research agency, December 2020

HOW DO MACADAMIA CONSUMERS FEEL ABOUT FOOD AND WELLBEING?

AUSTRALIAN MACADAMIA INDUSTRY RESEARCH REVEALS WHAT MACADAMIA CONSUMERS HAVE ON THEIR MINDS WHEN IT COMES TO HOW THEY VIEW FOOD AND HEALTH.

- People want to enjoy their food, but they also want to *feel good* about what they eat. They're constantly seeking a balance between foods that are healthy but also tasty.
- People want to take care of their health but feel 'eating healthy' is more important than following a particular diet
- Consumers now see physical and mental health as being equally important and something they can directly influence, particularly where food is involved.
- Eating well (74%) and sleeping well (67%) are universally seen as key to maintaining wellbeing
- Consumers recognise the link between food and good gut health
- Nuts are one of the most common foods consumers rely on to boost concentration and mental focus
- Good food is deeply entrenched in the lives of consumers in all markets surveyed, with more than 50% saying that enjoying delicious food is a key part of their happiness and emotional wellbeing.
- Australian produce is regarded as highly premium and safe.



FOR THOSE CONSUMERS WHO DO FOLLOW A DIET, THE MOST POPULAR ARE:

- Plant-based (China, Taiwan and South Korea)
- Keto (Japan and USA)
- Intermittent fasting (Australia)

CONSUMERS HAVE BOTH FUNCTIONAL AND EMOTIONAL EXPECTATIONS OF THE FOOD THEY EAT.

- The most important *functional* benefits:
 - Immunity support (Japan, China, South Korea and USA)
 - Fibre to support digestion and gut health (Australia)
 - Healthy fats to support heart health (Taiwan)
- The most important *emotional* benefits:
 - Food that offers brain and gut support to help with overall mood and wellbeing (Australia, Japan, China and Taiwan)
 - Convenient yet healthy snacks that provide essential nutrients (South Korea)
 - Energy to sustain throughout the day (Japan)

Sources:

1. Australian Macadamias qualitative consumer insights positioning research, FiftyFive5 research agency, June 2022
2. Discover Macadamias quantitative consumer insights research, Kantar research agency, December 2020

CONSUMER PROMOTION HIGHLIGHTS

The Australian Macadamias consumer promotion campaigns in Australia, Japan, China, South Korea and Taiwan have delivered a host of highlights in 2022, as audiences around the world were shown the many ways that Australian grown macadamias can elevate food and life as a healthy and indulgent whole food.



The Macadamia Change Makers video series that commenced in 2021 was continued with the addition of a new video that told the story of Australian macadamia pioneer Ian McConachie and the work of the Macadamia Conservation Trust. It was shared with consumers in Australia, Japan, China, Taiwan and South Korea.





EVENTS, OCCASIONS AND BRAND COLLABORATIONS

JAPAN



▲ PR Times health and beauty livestreamed event

TAIWAN



▲ Chinese New Year competition and collaboration with Taiwanese nut brand Nuts Papa

SOUTH KOREA



▲ Macadamia Masterclass



▲ Celebrate Harvest competition

▲ Show-stopping Cakes E-Recipe Book



▲ Drop Top brand collaboration



▲ Yonsei Dairy brand collaboration



▲ Macadamia Nut Day



BLOG AND RECIPE CONTENT

JAPAN

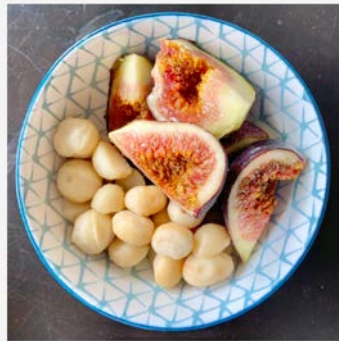


「ファスティング」を成功させるための6つのヒント

ファスティング、挑戦したことありますか？

ファスティング（断食）とは一定の期間、食事の摂取を断つこと。これにより消化器を休め調子を整えることで、ダイエットや美容に効果があるとされており、5：2（週5日食べて2日節制する）や16時間断食（1日のうち8時間の間に食事を摂る）など、巷にはたくさんのファスティング方法が溢れています。

今回はインスタグラマー兼写真家のローレンさんに、ファスティングにより体に起こる変化や彼女さんの注意点、マカダミアが大切な栄養源として取り入れられる



またマカダミアと同様に食物繊維が多く含まれており、腸内環境を整え便通の改善への効果も。カルシウム・鉄分・ミネラルも豊富、貧血やむくみ改善、さらには高血圧予防にもなるとか。さらに骨を強くするカルシウムもはっているのですから、古代から「不老長寿の果実」と大切に食されてきたことがよく分かりますよね！

ただ食べすぎには要注意！食物繊維が豊富なゆえに下痢や胃痛の原因、またアレルギー発症の原因にもなりうるので美味しく適量をいただきます。



次の旅先はここ！ サステナブルなマカダミア 農園でとっておきの体験を

ポストコロナの海外旅行がぐっと現実的になってきました。そろそろ旅行にいきなり、どこに行く？なんて具体的に計画し始めている方も多いのではないのでしょうか。

旅の話はいつだってワクワクしますよね！ということで今回はサステナブルなオーストラリアのマカダミア農園内にあるビジターセンターの見どころをご紹介します。是非、次回の旅先リストにエントリーして！

◀ Japanese blog posts

AUSTRALIA



7 reasons why you'll be eating more macadamias this spring



Step by step guide to smoking macadamia nuts

Smoking adds depth of flavour and aroma to food, ensuring a mouthwatering result. From various meats to...

[Read More »](#)



Your guide to a delicious plant based Easter

Those who choose plant-based don't need to miss out on all the chocolatey, yummy goodness of Easter. We've got you covered with these twelve delicious macadamia nut recipes.

[Read More »](#)



5 macadamia nut seasoning ideas to try today

The right macadamia nut seasoning can turn what is already a delicious mouthful into something truly sublime...

[Read More »](#)

▲ Australian blog posts



▲ New recipes including Healthy Macadamia Birthday Cake, Apple and Macadamia Coleslaw, and Gluten Free Macadamia Sticky Date Pudding



THE RISE OF INFLUENCER MARKETING

Influencer marketing has been a successful element of Australian Macadamias' consumer promotion for some time, with campaigns executed internationally in partnership with bloggers, key opinion leaders, celebrity chefs and food, beauty and lifestyle influencers.

Influencers are carefully selected, based on their audience size and profile, area of expertise, and alignment with Australian Macadamias' brand values, with these partnerships enabling us to share the taste, health, versatility and purity layers of the macadamia story with a wider audience. In 2022, influencer campaigns were executed in Australia, China and South Korea.

AUSTRALIA



Food writer and cookbook author **Magdalena Roze** shared her on-farm macadamia experience with her Instagram audience



Media sponsorship of Network 10's TV show *Left Off The Map* featured MasterChef contestant **Ben Milbourne** who created five new macadamia recipes, including *Macadamia Puttanesca*, and a macadamia cooking tips segment



Nutritionist **Casey Lee Lyons** from *Live Love Nourish* created new macadamia recipes including *Air Fryer Stuffed Macadamia Mushrooms* and *Air Fryer Hot Cross Macadamia Cookies*.

CHINA



For New Year, two nutrition influencers shared macadamia health messaging on Chinese Q&A platform *ZhiHu* while unboxing 'Macadamia Mystery Boxes'



Chinese New Year focused on taste with influencers amplifying CNY recipe posts

SOUTH KOREA



Partnering with influencers to 'takeover' the Australian Macadamias Korean Instagram feed throughout the year

HEALTH AND MACADAMIAS



Consumers are more interested in health and wellbeing than ever, with most identifying eating well as one of the keys to optimising wellbeing.²⁰ The body of evidence to support the role of nuts in living a long, healthy and happy life has grown substantially in recent years.

With the low-fat diet movement now a thing of the past and plant-based eating on the rise, nuts have become one of the most relevant foods for today's consumer – and macadamias are no exception. Enjoyed as a snack, as part of a main meal or applied as oil to the skin, macadamias offer a host of essential nutrients. They're also ideal as part of a Mediterranean or low FODMAP diet, as well as keto, paleo and vegan eating. Macadamias are the richest source of healthy monounsaturated fats of all tree nuts and are abundant in phytochemicals that support a healthy heart and brain as well as protein and fibre.

SKIN SUPPORT

The manganese in macadamias is essential for your skin to produce the collagen it needs to stay plump and wrinkle free. They are also high in palmitoleic acid to help replenish your skin's youthful glow¹⁹. Macadamias are an excellent source of protein, calcium, potassium, dietary fibre and a number of antioxidants – all of which we need to maintain glowing skin, strong nails and shiny hair.

ANTIOXIDANT POWER

Oxidative stress is caused by harmful free radicals that form in the body due to the numerous chemical reactions occurring. It contributes to inflammation, premature ageing and chronic diseases.^{1,2} Studies show that eating naturally antioxidant-rich macadamia nuts as part of a diet filled with fruits, vegetables and wholegrains improves markers of oxidative stress therefore reducing your risk of chronic disease and premature ageing.³ Macadamias contain some of the highest levels of antioxidants of all tree nuts, including the antioxidant minerals manganese, magnesium and copper, which help keep the immune system healthy. They are also rich in tocotrienols – a form of vitamin E that shows antioxidant properties – that may help lower cholesterol and protect against cancer and brain diseases.^{4,5,6,7}





HEART HEALTH

Research shows that many consumers seek out foods that are rich in healthy fats in order to support heart health.²⁰ In 2019, a systematic literature review around nuts and heart health⁸ showed that eating nuts, including macadamias, every day is associated with improvements in several aspects of heart health.

- **Macadamias and healthy cholesterol:** Regular consumption of nuts like macadamias has been shown to improve the ratio of 'good' (HDL) and 'bad' (LDL) cholesterol. Macadamia nuts are a rich source of phytosterols - natural, cholesterol-like substances found in many plant foods. Plant sterols can reduce cholesterol levels by being absorbed instead of some of the 'bad' (LDL) cholesterol, which results in reductions in blood cholesterol levels.⁹
- **Macadamias and blood pressure:** Macadamias contain the amino acid arginine, which acts as a precursor to the chemical messenger nitric oxide that causes blood vessels to dilate and remain elastic. This can reduce blood pressure among other benefits.¹⁰

HEALTHY WEIGHT

Eating a handful of macadamias every day can play a role in helping maintain a healthy body weight. They satisfy hunger and make us feel fuller for longer. While many people used to think the high fat content of nuts would lead to weight gain, we now know this is not the case. The PREDIMED Trial found eating nuts as part of a balanced diet resulted in a reduction in participants' waist circumferences.¹¹

BRAIN AND MENTAL HEALTH

Today's consumers place high value on foods that can support their brain health to help with overall mood and wellbeing.²⁰ The copper, magnesium and manganese in macadamias help maintain healthy neurotransmitters in the brain, while their palmitoleic acid forms an important component of the myelin sheath that insulates and protects nerve cells to allow electrical impulses to transmit efficiently around the whole body, including in the brain.¹² Macadamias contain vitamin B1 (thiamine) that is essential for the proper functioning of your nervous system. Having a healthy heart is linked to brain health¹⁴ and so the monounsaturated fats, vitamin E, antioxidants and other compounds in macadamias that are good for our heart will support our brain function too. Macadamias contain oleic acid (omega 9) which helps keep blood pressure low, reducing the risk of stroke. A recent research trial showed that people who ate nuts regularly had a lower risk of depression.¹⁸

DIABETES MANAGEMENT AND PREVENTION

Macadamias are an ideal food for those with diabetes or raised blood glucose levels. Eaten on their own, they are a low-GI snack packed with healthy monounsaturated fats. They're also a perfect companion food to help lower the GI of carbohydrate-containing meals and snacks.¹³

- **Good for blood sugar levels:** containing only small amounts of carbohydrate, macadamias have a positive influence on blood glucose levels. The fat, protein and fibre they contain also helps lower the GI of a meal or snack that contains carbohydrates by slowing the digestion and therefore the release of glucose from carbohydrate-containing foods.¹³
- **A diabetes-friendly choice:** Nuts like macadamias also contain nutrients, fat, fibre and polyphenols that can help improve insulin function, meaning blood glucose levels don't rise as much after eating.
- **Diabetes prevention:** Eating nuts like macadamias can help with the prevention of type 2 diabetes. An analysis of multiple studies found eating 30g of nuts four times a week reduced the risk of developing type 2 diabetes by 13%.^{15,16,17}



GUT HEALTH

One of the top benefits consumers are now seeking from the food they choose is gut support to help with overall mood and wellbeing, and fibre to support digestion.²⁰ Just one handful of macadamia nuts contains 2g of dietary fibre, similar to a slice of wholemeal bread. Dietary fibre is important for bowel regularity. Nuts like macadamias also contain prebiotic fibre. This is fibre that is a fermentable food for your gut's natural bacteria and fungi (called microflora). When this prebiotic fibre is fermented by gut bacteria, short chain fatty acid gases

are produced that are beneficial to the lining of the gut. This activity plays a role in the production of the 'happy hormone' serotonin as well as influencing hormones that affect weight management, appetite, blood sugar levels and the immune system. So by eating prebiotic fibre you are stimulating a healthy colony of gut bacteria to benefit your overall health.

HEALTH AND WELLBEING REFERENCE LIST

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MARKET ANALYSIS

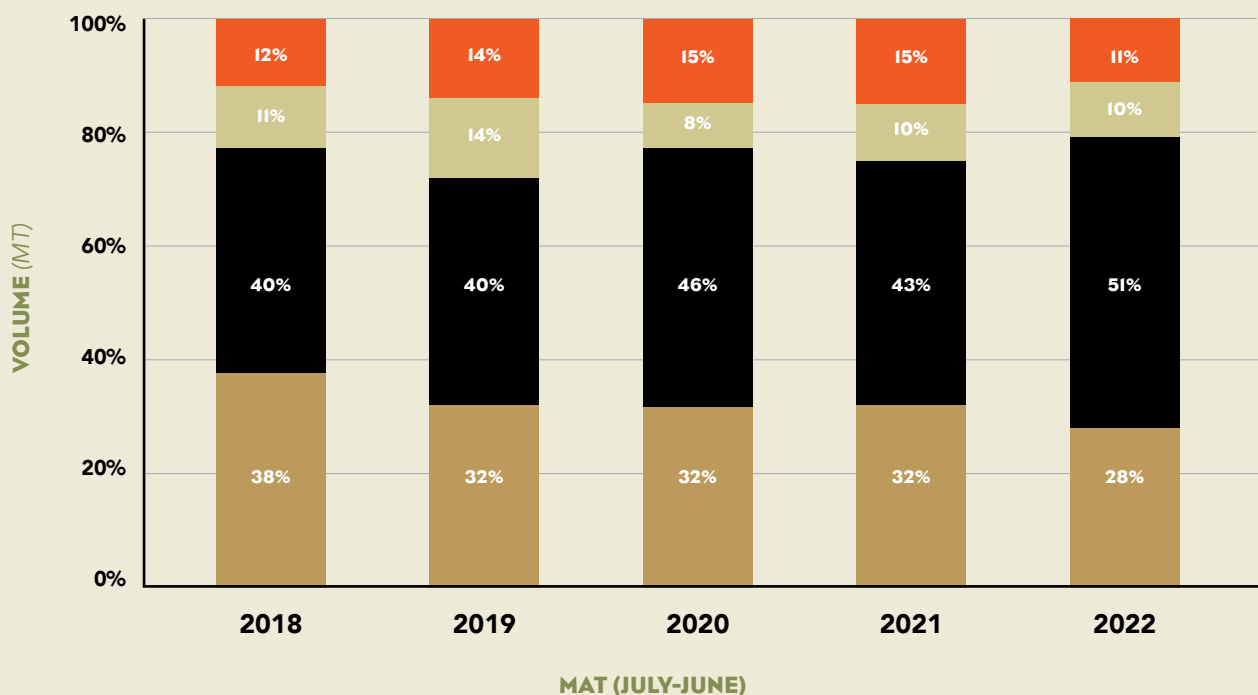
AUSTRALIAN MACADAMIA SALES

The Australian macadamia industry continues to prove it is resilient despite the ongoing challenging market conditions created by increasing global supply, intensified price pressure in the ingredient market, and increasing cost and complexity in the supply chain. The quality standing of Australian macadamias in the global market and the strong commercial relationships in place have resulted in continued growth for Australian kernel sales in 2022.

Australian macadamia kernel sales recorded an 8% increase overall for the MAT period (July to June). The increase was driven by strong kernel sales to China and Hong Kong with increases also seen in Japan, Taiwan and Other Asia. Sales to the domestic, South Korean and Other Europe markets softened slightly, while Germany was stable.

In-shell sales to China and Hong Kong finished strongly and ahead of last year. Although, Australia's market share was slightly down in this growing market.

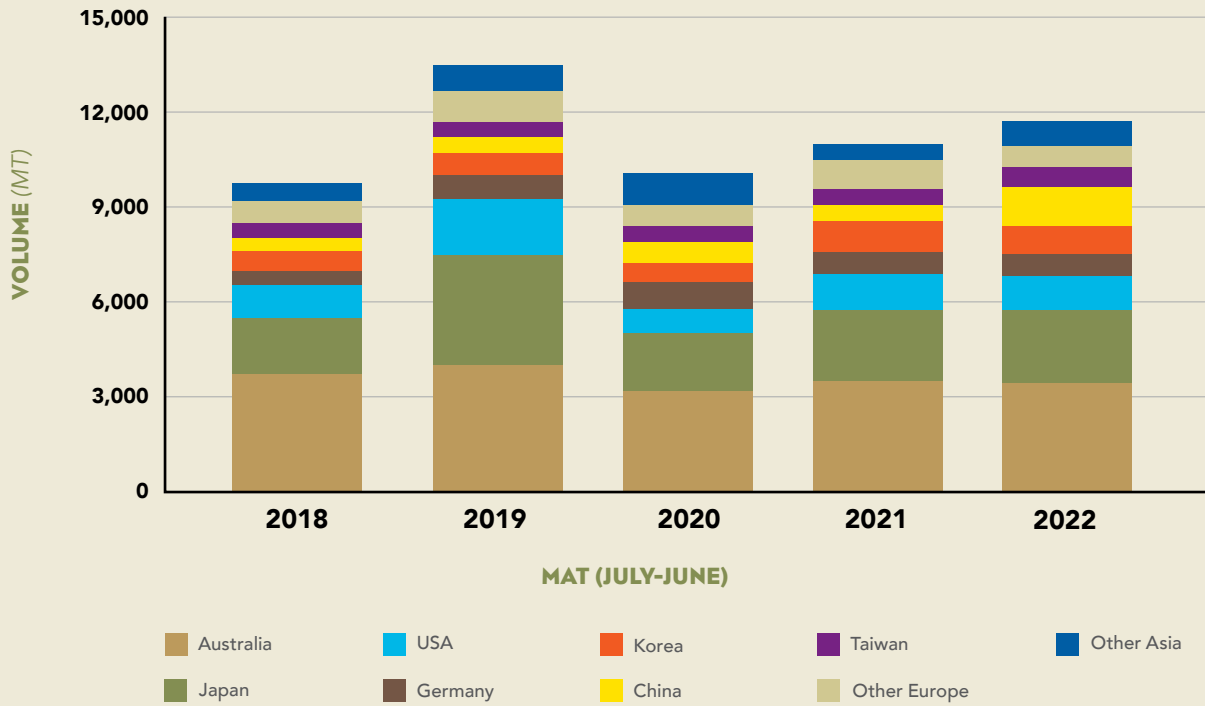
FIGURE 5: AUSTRALIAN KERNEL SALES DISTRIBUTION BY REGION MAT (JULY-JUNE)



Source: Australian Macadamia Handlers Association

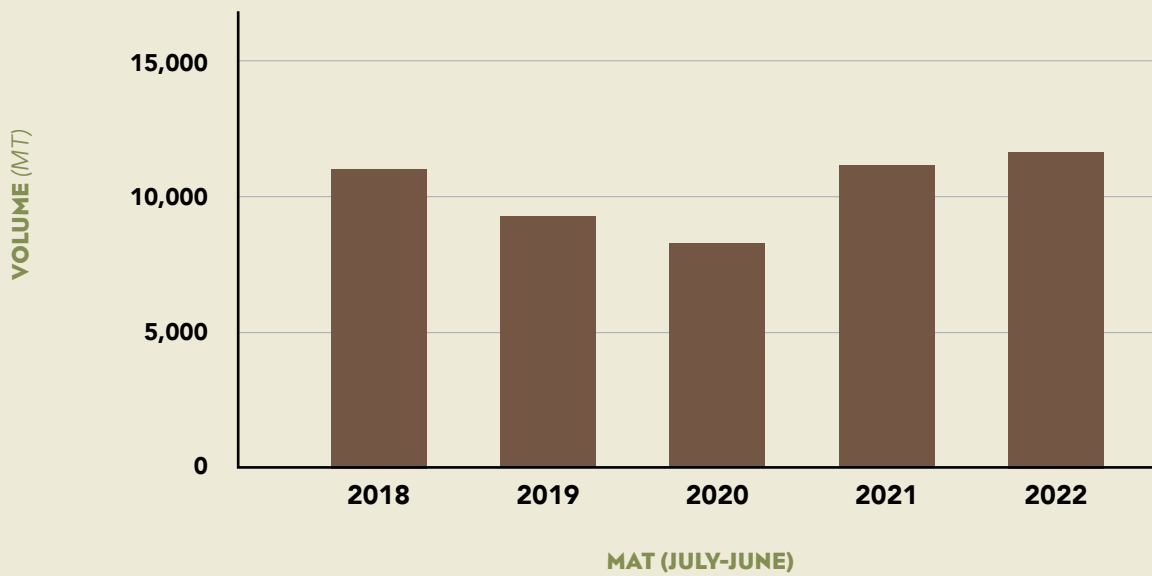
Australia Asia USA Europe

FIGURE 6: AUSTRALIAN KERNEL SALES BY MARKET MAT (JULY-JUNE)



Source: Australian Macadamia Handlers Association

FIGURE 7: AUSTRALIAN IN SHELL SALES MAT (JULY-JUNE)



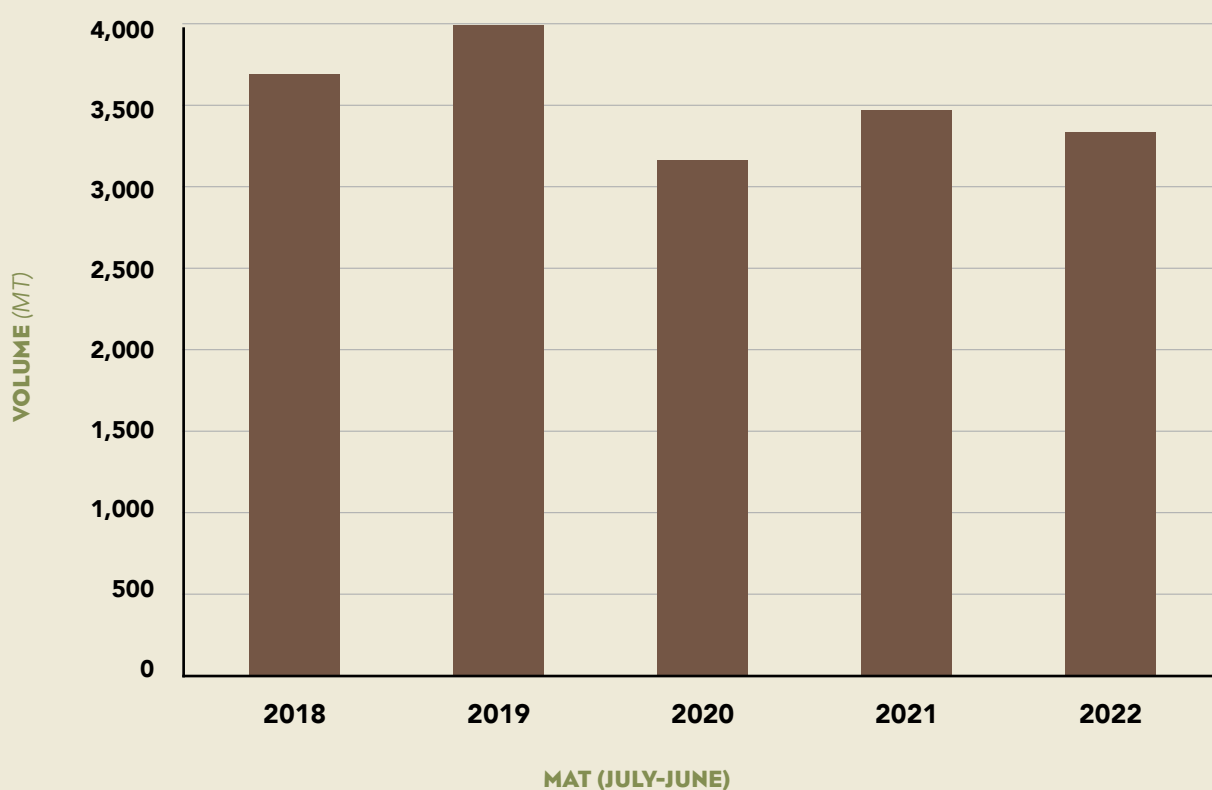
Source: Australian Macadamia Handlers Association

AUSTRALIA

Australia is the second largest consumer of macadamia kernel in the world behind the United States and more than 95% of the kernel consumed in this market is Australian origin.

Sales to the domestic market for the 12 months to June 2022 decreased by 3.7%. Cost-of-living pressures driven by rising inflation and interest rates appear to have slowed growth generally in the food sector. NielsenIQ Homescan™ reported the number of households, in particular families, buying macadamias has declined. However, there was an increase in average amount spent with frequency of purchase remaining stable (52 weeks to 19/06/2022 vs Year Ago). Macadamias continue to hold the highest price and significant price differential relative to other tree nuts and retail promotional activity has been reduced due to macadamia pricing, supply chain and workforce challenges.

FIGURE 8: AUSTRALIAN KERNEL SALES TO THE DOMESTIC MARKET



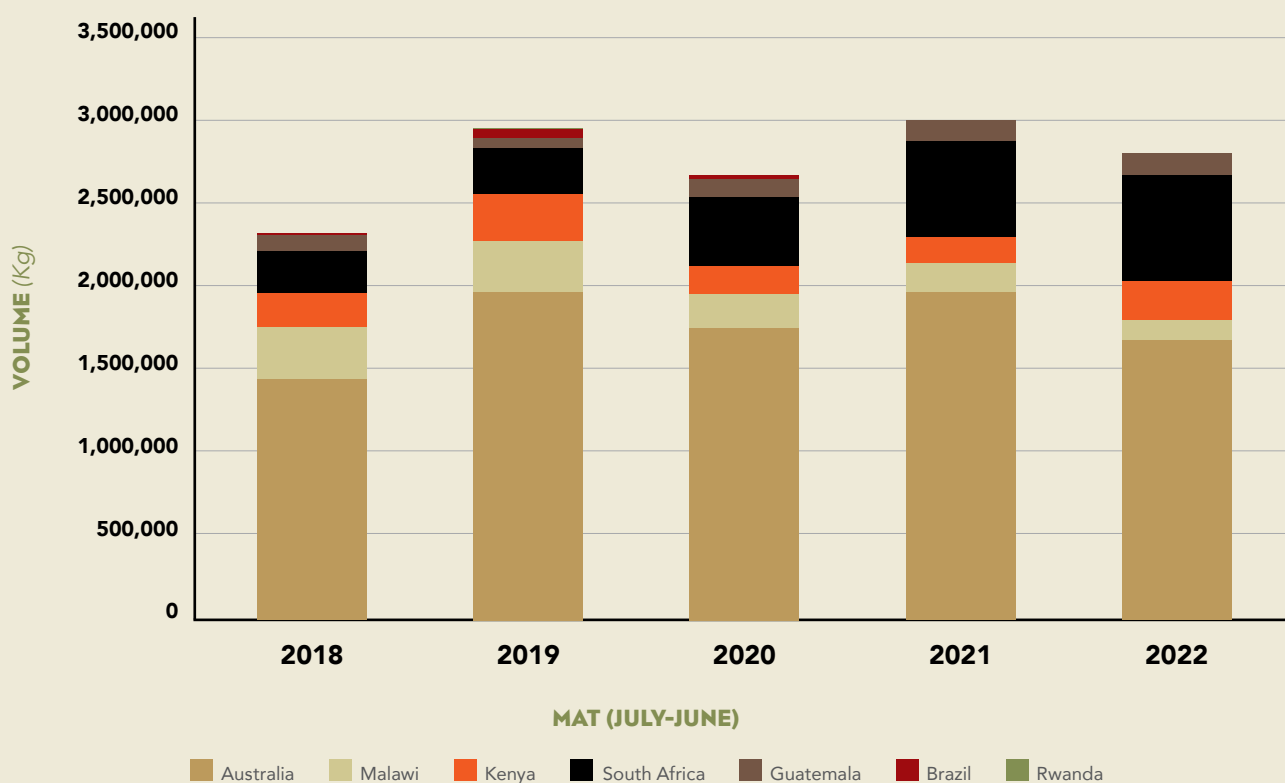
Source: Australian Macadamia Handlers Association

JAPAN

Macadamia imports to Japan were down by 5% in the 12 months to June 2022. Australia continued to be the major supplier with 60% of imports. Kenya and South Africa have gained market share in this market in the last 12 months.

Japan is a well-established market that has traditionally used macadamias primarily as an ingredient (in chocolate confectionery), however in recent years there has been considerable expansion into use in snacking, especially in premium nut mixes. There has also been an increase in use in bakery products such as cookies.

FIGURE 9: MACADAMIA KERNEL IMPORTS TO JAPAN



Source: Macadamia kernel imports (volume) to Japan

CHINA

Total macadamia kernel imports to China and Hong Kong continue to grow year on year. Imports for the 12 months to June 2022 were up 21%. Australia remains the major supplier with 78% of imports. Kenya was the fastest growing importer in 2022, followed by South Africa and Vietnam.

Total macadamia in-shell imports to China and Hong Kong for the period were the highest on record for many years, up by 29%. Australian imports increased 15% for the period, resulting in a reduced market share of 29%. South Africa recorded its highest ever imports, capturing market share of 40%. Guatemala and United States recorded strong growth, achieving 12% and 8% market share respectively.

Kernel use in China is still low compared to in-shell, however this segment is expected to develop strongly in coming years.

Macadamia usage in China is currently skewed heavily to snack format.

FIGURE 10 : MACADAMIA KERNEL IMPORTS TO CHINA AND HONG KONG (SUMMED)

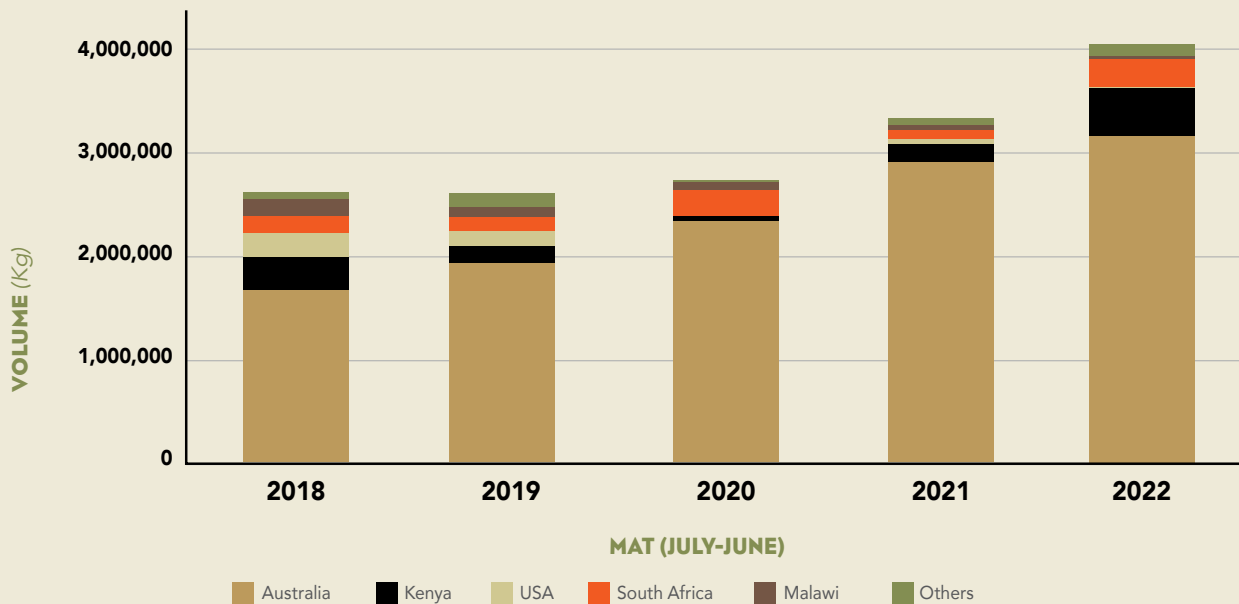
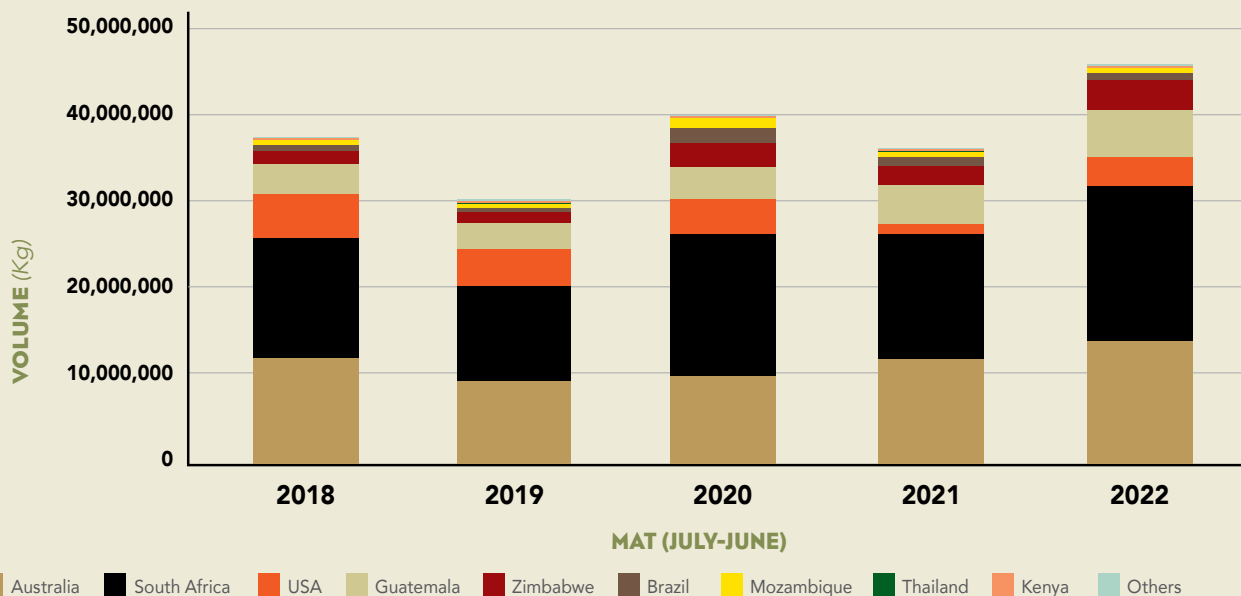


FIGURE 11: MACADAMIA IN SHELL IMPORTS (VOLUME) TO CHINA AND HONG KONG (SUMMED)

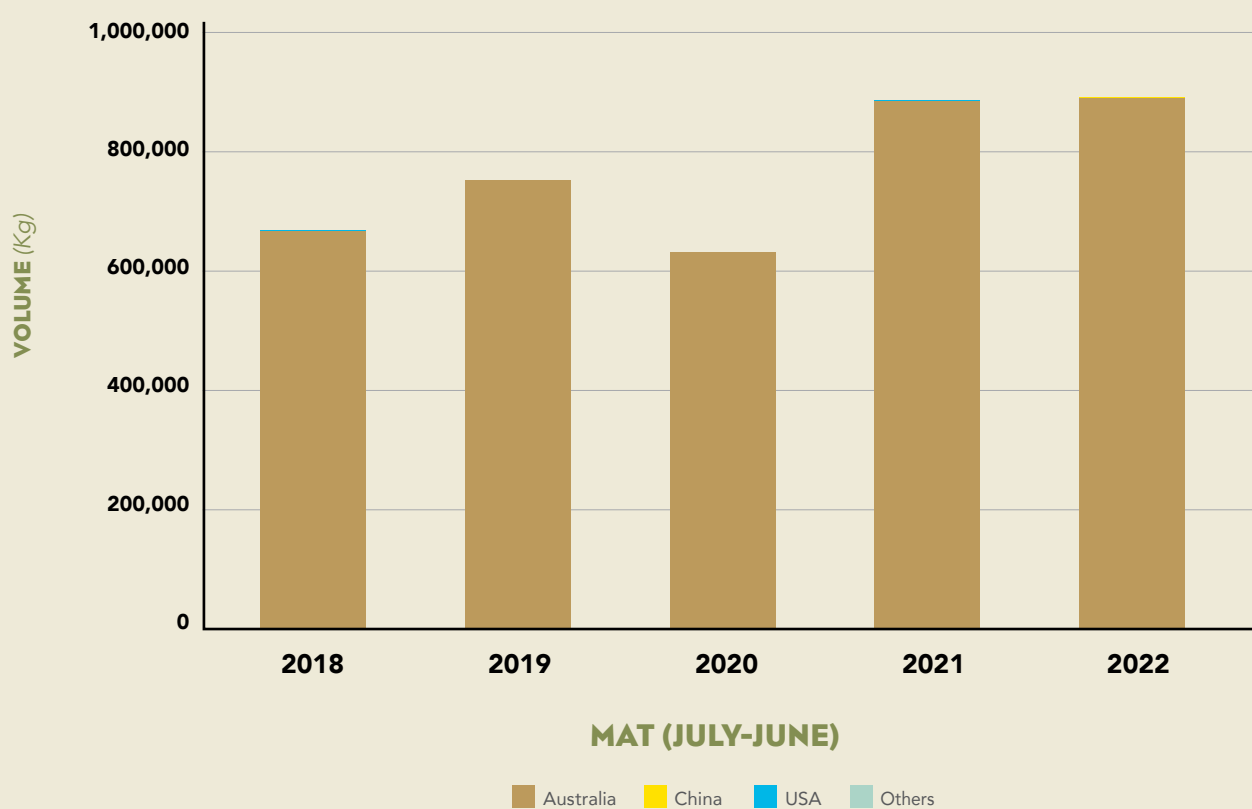


SOUTH KOREA

After experiencing significant growth in 2021, total macadamia kernel imports to South Korea remained stable in the 12 months to June 2022. Australia continued to be the dominant supplier with 99.8% of imports, primarily due to the Korea-Australia Free Trade Agreement (KAFTA), which entered into force on 12 December 2014.

Macadamia usage in South Korea is primarily in snack formats, often in daily nut mixes, and flavour innovation is growing. There is considerable scope and expectation of further growth in this market.

FIGURE 12: MACADAMIA KERNEL IMPORTS TO SOUTH KOREA



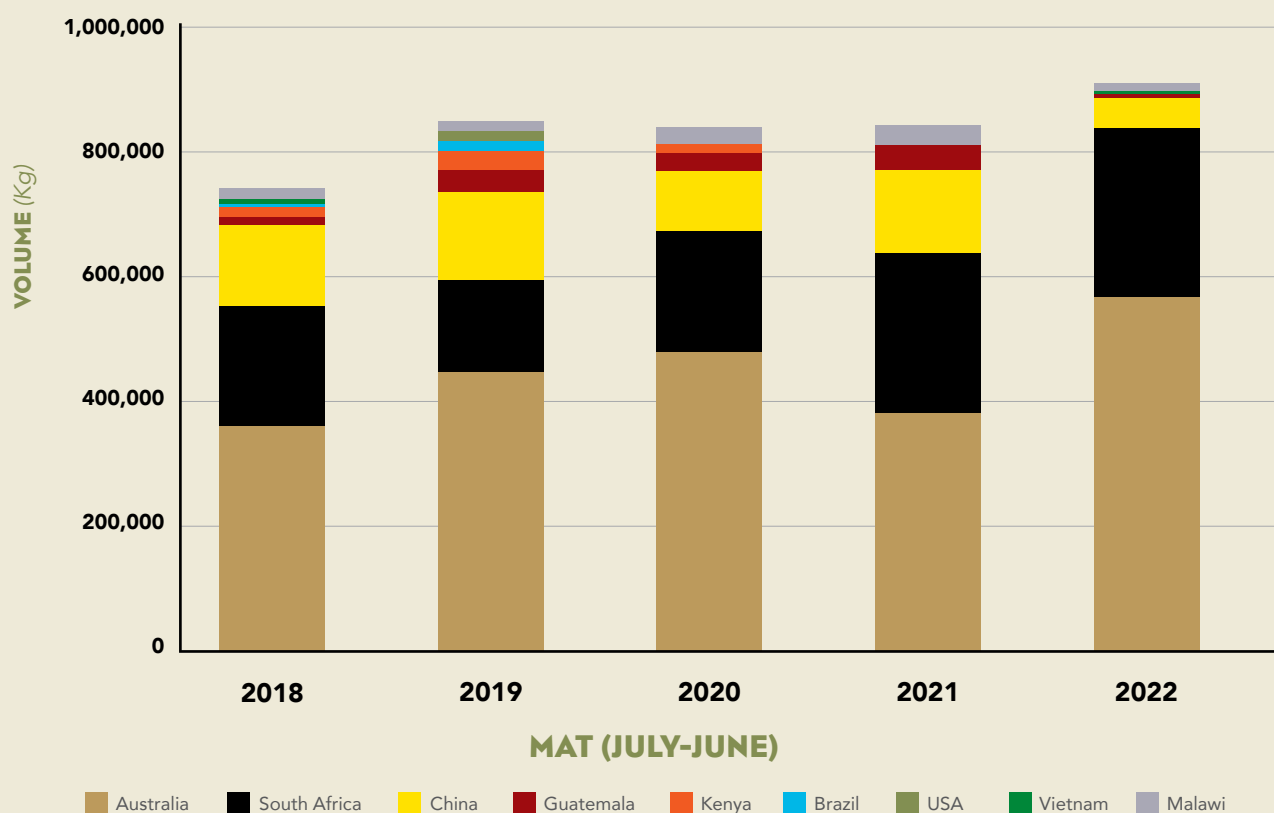
Source: Korea Customs and Trade Development Institution

TAIWAN

Total macadamia kernel imports to Taiwan grew 12% in the 12 months to June 2022. The growth was driven by Australia and South Africa. Australia continued to be the major supplier with 60% of imports and South Africa increased its share of imports to 32%. Imports from China and Guatemala were significantly down on prior year.

Macadamia usage in Taiwan is primarily as an ingredient in nougat and bakery products. Usage in snack is growing in both straight macadamia and mixed nut lines.

FIGURE I3: MACADAMIA KERNEL IMPORTS TO TAIWAN



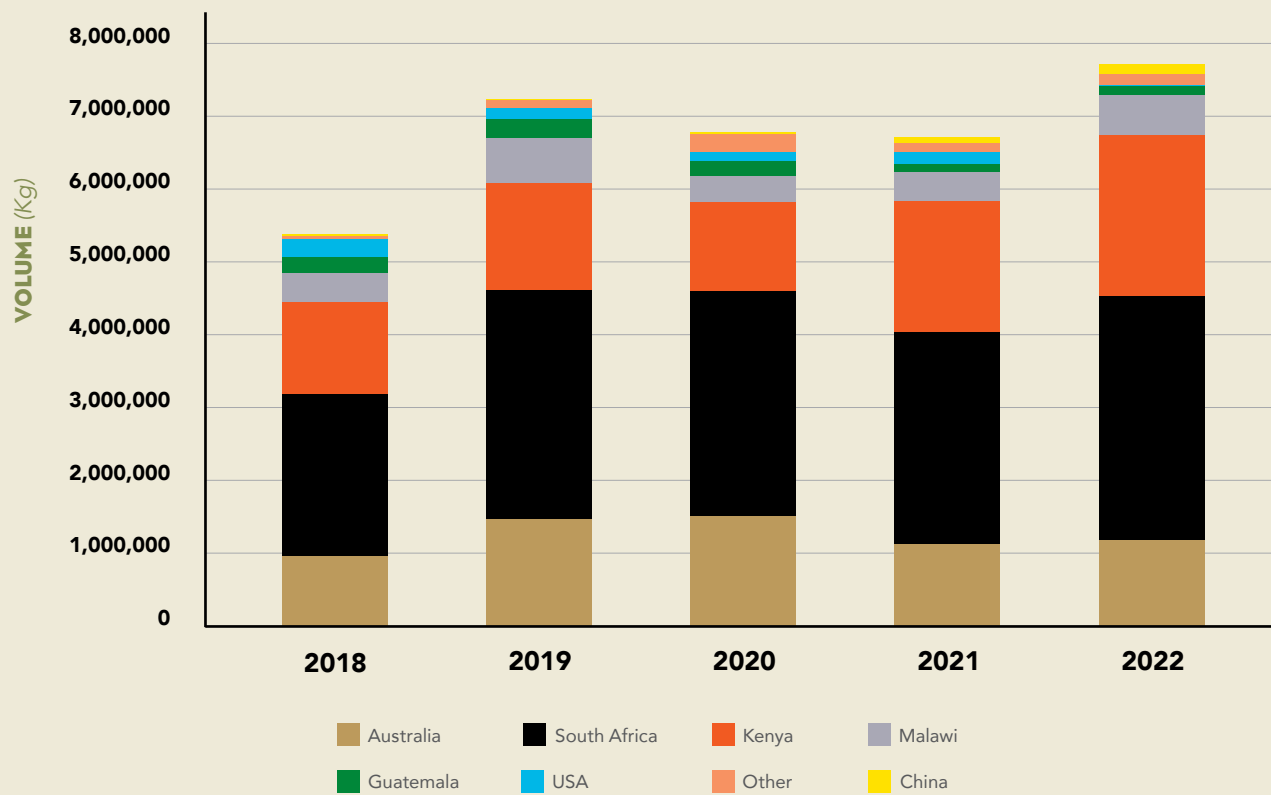
Source: Taiwan Directorate General of Customs

EUROPE

As the Europe market opened up post Covid-19, total macadamia kernel imports grew by 16% (MAT June 2022). South Africa continued to be the major supplier to this market at 44% of imports, extending its share from 41% in the year prior, Kenya increased its share by 1% to 28% and the Australian share of imports dipped to 15%.

Macadamia usage in Europe is primarily as a snack product.

FIGURE 14: MACADAMIA KERNEL IMPORTS TO EUROPE



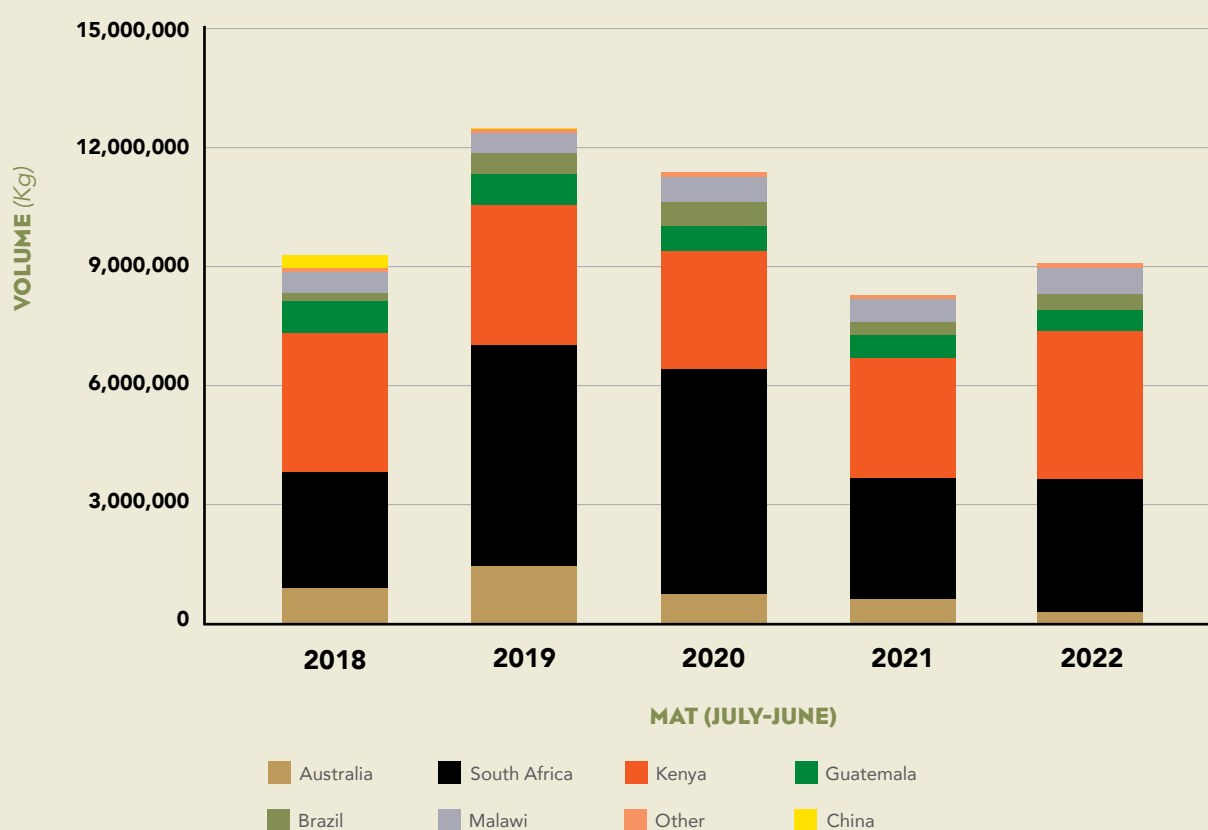
Source: Eurostat

UNITED STATES

While 2021/22 saw a marginal uplift in total imports, they remain well below the pre-Covid years of 2018 and 2019. One key driver is the lower demand from the tourism sector in Hawaii. Visitor statistics from Hawaii's Department of Business, Economic Development and Tourism (DBEDT) highlight that while visitor numbers continue to improve, visitors are primarily coming from the USA. Japanese visitors are traditionally the major spenders on macadamia products and visitation is down significantly versus pre-Covid times. "There were 11,940 visitors from Japan in June 2022 compared to 126,592 visitors (-90.6%) in June 2019. Visitors from Japan spent \$24.3 million in June 2022 compared to \$182 million (-86.7%) in June 2019."

Imports continue to be dominated by Kenya and South Africa, with Australia's market share falling back to 2%.

FIGURE 15: MACADAMIA KERNEL IMPORTS TO USA



Source: USDA

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**Hort
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Strategic levy investment

**MACADAMIA
FUND**

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