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Report Highlights:

Tree nut production in Australia has surged in recent years and prospects are for continued rapid expansion in production for a number of years. Almonds are by far the most important tree nut produced in Australia in terms of production and value, followed by the native macadamia nut and walnuts. FAS/Canberra forecasts almond production to set yet another record of 120,000 metric tons (MT) in MY 2020/21. Similarly, macadamias and walnuts are also forecast to reach record production in MY 2020/21 of 50,000 MT and 13,800 MT, respectively.

Executive Summary

Tree nut production in Australia has surged in recent years and prospects are for continued rapid expansion in production for a number of years. Almonds are by far the most important tree nut produced in Australia in terms of production and value, followed by the native macadamia nut and walnuts. FAS/Canberra forecasts almond production to set yet another record of 120,000 metric tons (MT) in MY 2020/21. Similarly, macadamias and walnuts are also forecast to reach record production in MY 2020/21 of 50,000 MT and 13,800 MT, respectively.

These increases in production for almonds, macadamias and walnuts are all primarily due to expanded plantings coming into production. The large recovery in expected macadamia production is also attributed to drought impacts on MY 2019/20 production, which primarily affected the Northern Rivers region where trees are typically rain-fed. Almonds are entirely produced in irrigated regions and walnut production is also almost totally irrigated, minimizing drought impacts on production of these two nuts.

The majority of the increased production for almonds is forecast to go towards exports in MY 2020/21. For macadamias and walnuts, the forecast increase in production will contribute to higher exports and more domestic consumption. Further increases in production and exports are expected in subsequent years due to continued growth in tree plantings coming into production.

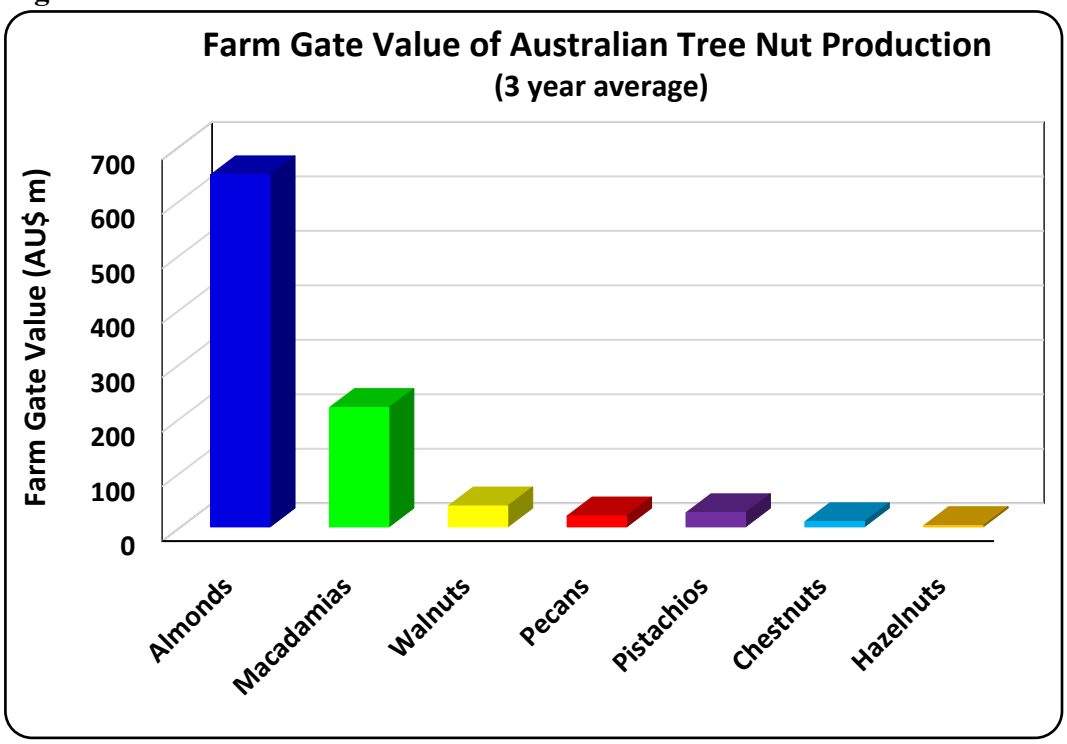
ALMONDS

Industry Overview

Almonds are by far the largest tree nut industry in Australia, followed by macadamia nuts and walnuts (see figure 1). Pecans, pistachios, chestnuts and hazelnuts are also produced in Australia but at a relatively small scale. The farm gate value of almond production is around three times that of macadamias and seventeen times that of walnuts.

Almonds were first introduced into Australia in 1836 with the first plantings on Kangaroo Island with subsequent commercial plantings across the Adelaide Plains around the city of Adelaide in the early 1900s. They then spread to be grown along the Murray River in the Riverland region (South Australia) in the 1960s and then into the Sunraysia region (Victoria) in the 1970s. However, industry growth has mainly occurred only since 2000. At that time the area planted was only 3,546 hectares (ha) and over the past two decades has increased by a massive 1,400 percent to 53,014 ha. The majority of the expansion has been driven by large corporate investment into the industry. Over the last decade the Riverina region in New South Wales also became a key almond growing region. These three regions now produce 97 percent of almonds in Australia and the nation is now the second largest producer of almonds in the world.

Figure 1 – Farm Gate Value of Australian Tree Nut Production



Source: Horticulture Innovations Australia and Almond Board of Australia

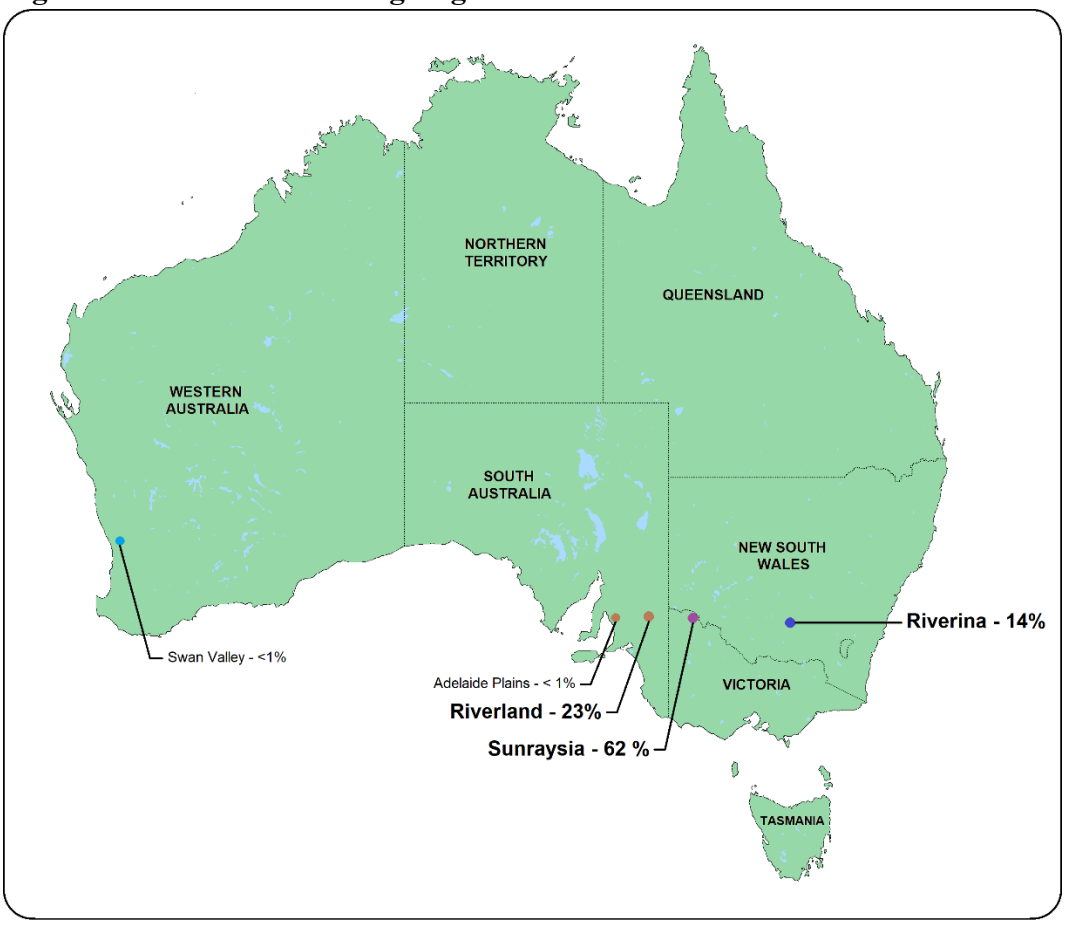
The Sunraysia region in Victoria produces almost two-thirds of the total production, whereas the Riverland region in South Australia produces around one-quarter, and the Riverina region of New South Wales produces around one-seventh of national production (see figure 2). The other two very small producing regions are the Adelaide Plains of South Australia and Swan Valley in Western Australia.

The industry has undergone a major growth phase of new plantings over the last five years (see figure 3). The almond industry in Australia is relatively young and as recently as 2015 the total planted area was 31,115 ha, of which 84 percent was mature and in full production. In 2019, however, the total area grew to 53,014 ha, 29 percent of which are non-bearing trees (one to three years) and a further 18 percent maturing (four to seven years). The majority of the impact of this growth phase is yet to be seen in production results, as the area of mature trees (eight or more years) has only increased from 26,117 ha to 28,360 ha (almost nine percent) over the last five years as compared to the non-mature trees which have grown from 4,998 ha to 24,654 ha.

Sunraysia and Riverland are preferred growing regions as they have free draining sandy to sandy loam soils, warm climate with low rainfall (reducing the risk of rain during harvest), along with an adequate cold chill period over winter and low risk of hail. These regions are reliant on irrigation water supplied through the Murray Irrigation System via pump stations from the Murray River. Although there is

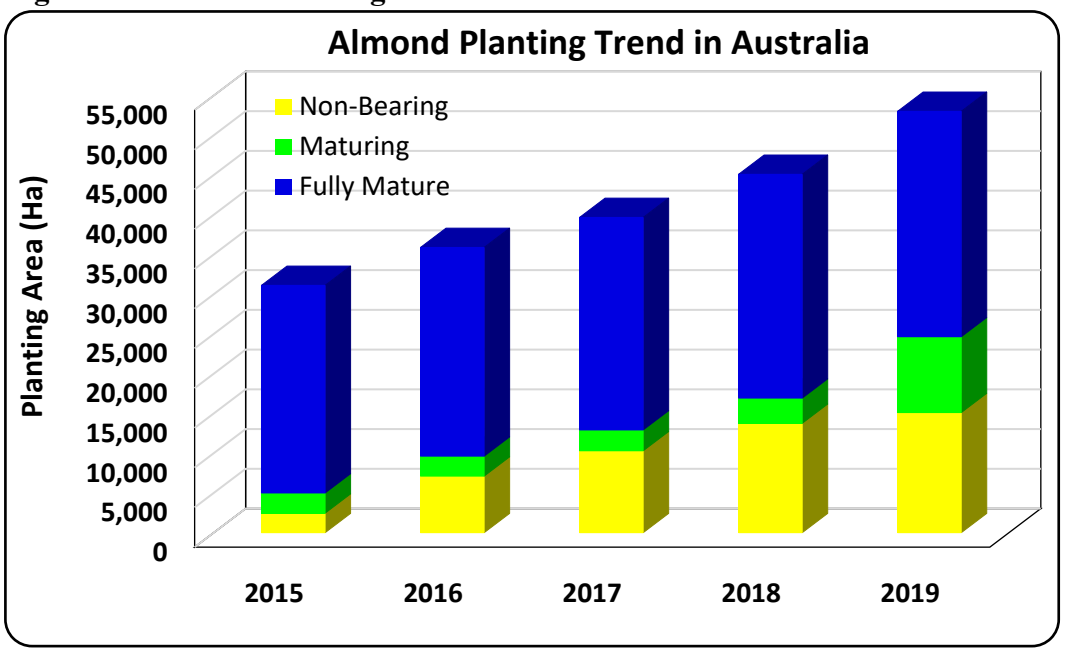
sufficient water available in the Murray Irrigation System for high value water uses such as almond producers, the key limitation to any significant expansion of the industry is the inability of the system to deliver the water to the Sunraysia and Riverland regions. The Sunraysia and Riverland regions are downstream of what is known as the Barmah Choke which is a limitation to the amount of water that can be delivered to these regions. Tree nut and other horticulture sectors in the region are, in general, able to outcompete other agricultural sectors on the same irrigation scheme in regard to their capacity to pay higher water prices.

Figure 2 - Almond Producing Regions in Australia



Source: Almond Board of Australia

Figure 3 – Almond Planting Area Trend



Source: Almond Board of Australia

The Riverina region, although well suited to almond production, has a higher rainfall and heavier soils which can impede harvest and also reduce the quality of in-shell almonds caused by water stains on the shell. This region has other key horticulture industries including citrus and table grapes which compete for land and water resources. However, the region also has a substantial irrigated rice industry along with other cereal crop production, some of which is partially irrigated. The horticulture industries are typically able to incur higher water prices and so this region is well placed for further almond industry expansion.

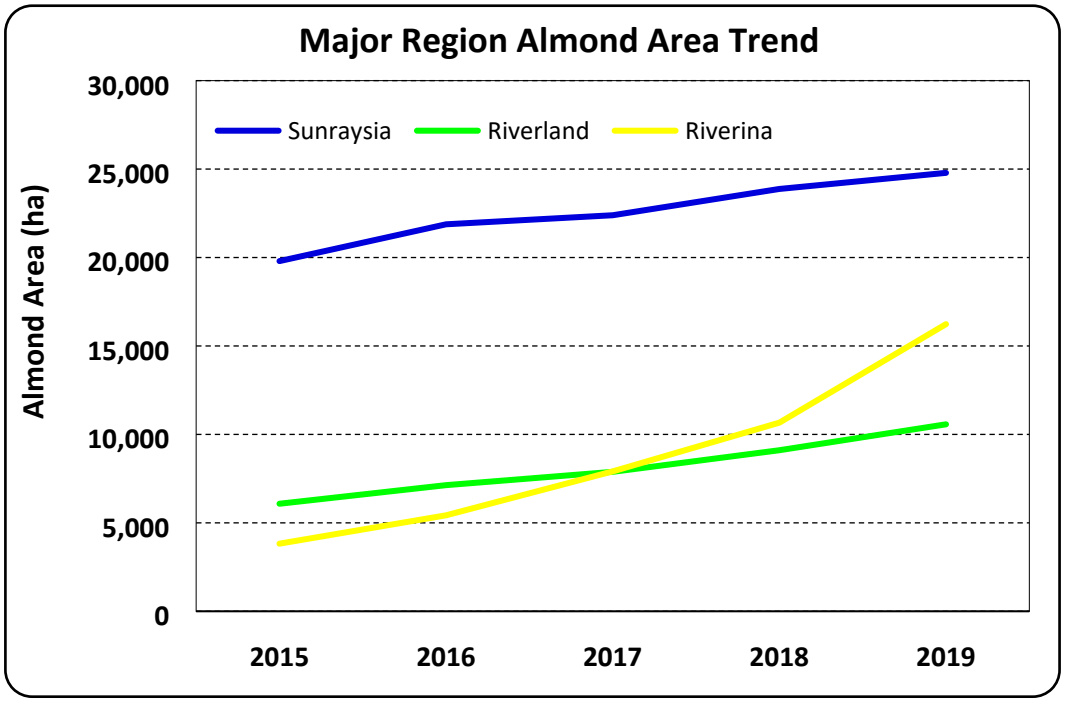
Due to the water availability limitations in the Sunraysia and Riverland regions, the Riverina region has been the major growth area for almonds over the last five years, increasing by 325 percent from 3,824 ha in 2015 to 16,234 ha in 2019 (see figure 4). Due to the recent rapid growth in plantings in this region, it will in the coming years become the second largest producing region as these trees reach maturity.

Tree blossom typically occurs from late July to early September in Australia, after which the nuts form and the hulls cover the nuts. After the hulls mature and harden from September to December the kernels begin to increase in weight until maturity. Once the nut has finished growing the hull begins to split and the nut begins to dry. Almond harvest typically commences in March and is completed by May.

The two main varieties grown in Australia are Nonpareil and Carmel and by area planted are 46 percent and 24 percent of total plantings, respectively. Monterey (11 percent) and Price (eight percent) also have a significant amount of planted area. These varieties were all bred in the United States and all

require cross pollination. In Australia the most popular combination is Nonpareil and Carmel planted in alternate rows. Monterey and Price are also varieties typically planted in combination with Nonpareil. Almonds are not wind pollinated easily and so the pollination process is facilitated by bringing beehives into almond orchards typically over a six to seven-week period on orchards with a range of varieties.

Figure 4 – Almond Tree Planted Areas in the Three Key Producing Regions



Source: Almond Board of Australia

Over recent years there has been significant concern that there will be a shortage of beehives due to the growth of orchard industries in Australia along with the recent drought and bushfires. The industry in Australia has been investing significant research and development efforts into producing new almond varieties with a particular focus on self-pollinating varieties. There are currently six Australian bred varieties, four of which are self-pollinating, undergoing trials in Australia and California.

If new self-pollinating varieties prove successful they will provide substantial cost saving advantages in production, partially due to removing the need for employing beehive services. However, a more significant impact is the reduced orchard management logistics demands and reduced capital cost of having dual irrigation infrastructure in each block, as differing varieties have differing water and nutritional needs.

There are three key almond processors across the Riverland, Sunraysia and Riverina regions. Two of these are corporate entities also with their own large almond orchards. One entity only processes their own almonds while the other two processes their own almonds and those of a small group of large corporate almond producers.

The industry marketing year (MY) is aligned with the start of harvest commencing in March and ending in February. The USDA marketing year for tree nuts in the Southern hemisphere is January to December and on this basis exports in the January and February period are typically from the preceding crop, which results in higher ending year stock levels than industry data.

Production

The forecast production for MY 2020/21 is 120,000 metric tons (MT) of almond kernels, up around eight percent from the MY 2019/20 estimate of 111,000 MT. With only three major processors in the industry and with processing completed in early July 2020 the estimate is based on industry sources and has an expected relatively high degree of accuracy.

The forecast production increase in MY 2020/21 is directly driven by the growth in plantings over recent years, and the increasing number of trees moving from non-bearing to maturing, and from maturing to mature (see figure 3). Although there has been an evident sharp increase in almond tree planting from MY 2017/18 to MY 2018/19, these trees will take a number of years to come into production and have a major impact on production in coming years.

Over the last ten years production has increased by 195 percent from 37,626 MT in MY 2010/11 to an estimated 111,000 in MY 2019/20. New production records are expected to be continually set in the coming years as non-bearing and maturing trees come into production. Based on the increased plantings over recent years, and the tree age profile, industry projections are that production will increase a further 30 percent over the next five years to 145,000 MT.

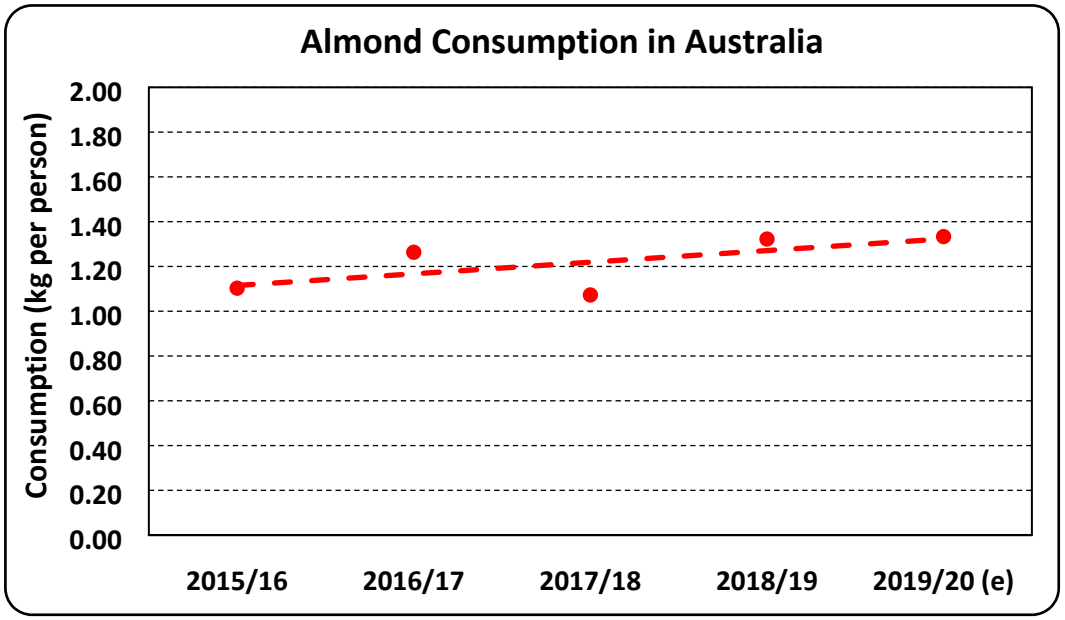
Consumption

FAS/Canberra forecasts MY 2020/21 consumption at 35,000 MT, an 800 MT increase from the MY 2019/20 estimate.

Domestic consumption has been increasing along with increased consumer health consciousness and increased new product offerings. There are a large number of new products in the market over recent years which use almonds as an ingredient, such as cereals, snacks, bakery, confectionery and milk.

Over the last five years the consumption of almonds in Australia has continued to trend upwards. Consumption has increased from around 1.10 kg per person in MY 2015/16 to an estimated 1.33 in MY 2019/20 (see figure 5). With increasing health consciousness and the versatility of almonds as an ingredient to a range of product categories, industry anticipates the rising consumption trend to continue in the coming years.

Figure 5 – Almond Consumption Trend in Australia



Source: Australian Bureau of Statistics and FAS/Canberra

The MY 2019/20 domestic consumption estimate has been revised up to 34,200 MT from 22,400 MT. This is primarily a result of improved industry data availability.

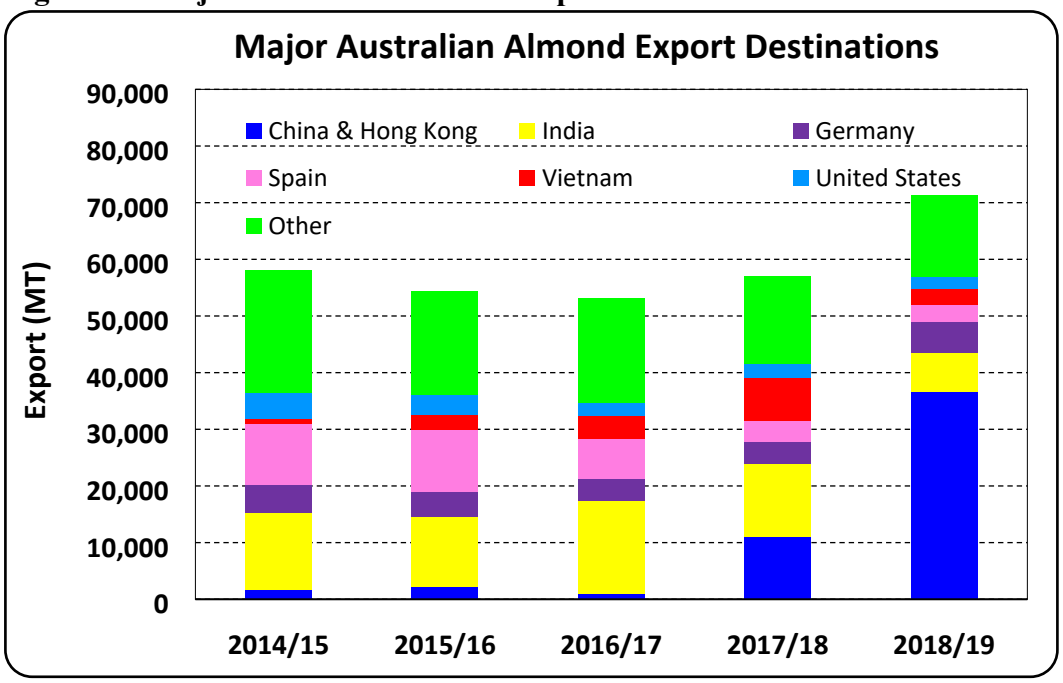
Trade

Exports

FAS/Canberra forecasts MY 2020/21 exports of 88,000 MT, an increase of 13,000 MT from the MY 2019/20 estimate. This is driven by a 9,000 MT increase in production and larger ending stocks being exported in early 2021. Most of the increasing production expected in coming years is anticipated to be exported and ending stocks will likely rise proportionally with increasing production.

Although Australia exports almonds to over 40 countries, the major growth destination has been China. Exports to China and Hong Kong over the last three years have increased from 879 MT in MY 2016/17 (accounting for just two percent of total exports) to 36,579 MT in MY 2018/19 (representing over half of exports – see figure 6). Over the last five years there has been a significant decline in exports to India, Spain and the United States but only modest increases in exports to Vietnam and Germany.

Figure 6 – Major Australian Almond Export Destinations



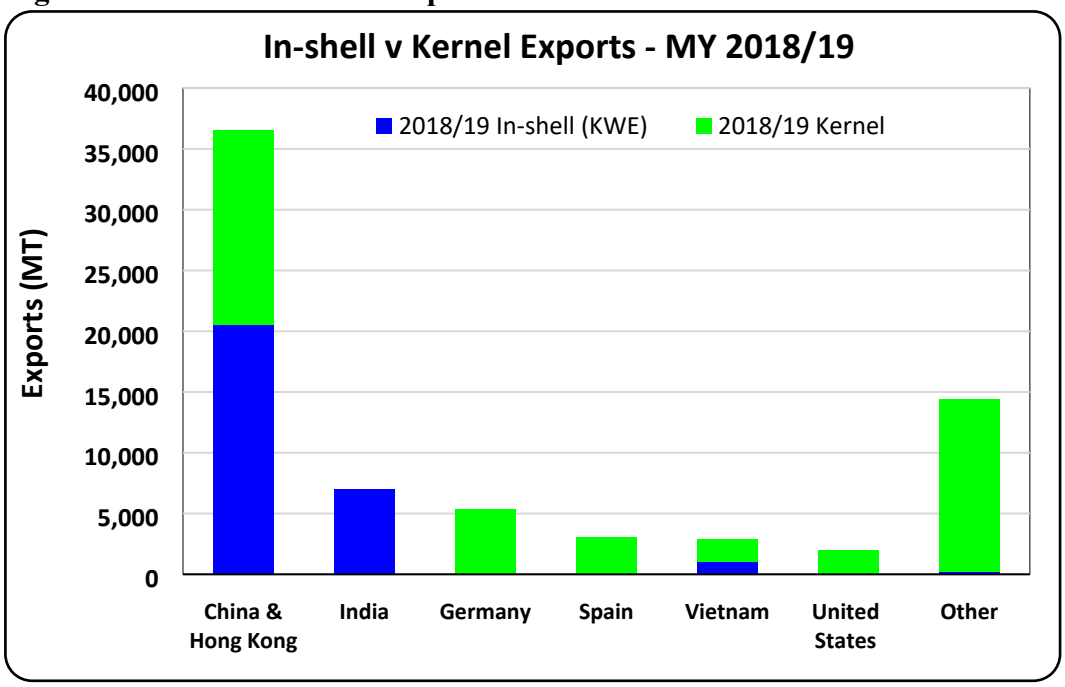
Source: Australian Bureau of Statistics

The rising dependence on China and Hong Kong as an export destination for Australia is causing some concern in the almond industry, particularly in light of no significant increases to other export destinations recently, and with larger almond crops set for coming years.

Almonds are exported on an 'in-shell' and 'kernel' basis according to consumer demand. In MY 2018/19, around 40 percent of exports were in an in-shell (kernel weight equivalent (KWE)) basis and 60 percent as kernels. In-shell exports of almonds, however, are almost entirely to China, Hong Kong, India and Vietnam (see figure 7).

The MY 2019/20 export estimate is unrevised from the previous forecast 75,000 MT despite the production estimate increasing from 106,000 MT to 111,000 MT. Exports in the January to August 2020 period in MY 2019/20 were 38,869 MT, compared to 53,600 MT during the same period in the previous year. The reduced exports coincide with the announcement of a large almond crop in California and the subsequent decline in world market prices. Industry sources indicate that the Australian processors had supplied their forward contracted almonds in the first half of 2020 and generally opted out of selling on the export market while prices were low. Industry indicates that enquiries in August/September were strong and world prices have improved. On this basis processors are confident of an increasing rate of export sales in the September 2020 to February 2021 period in the lead up to the commencement of next harvest in March 2021.

Figure 7 – In-shell v Kernel Exports - MY 2018/19



Source: Australian Bureau of Statistics

Imports

FAS/Canberra forecasts MY 2020/21 almond imports of 3,000 MT, a return to more typical levels. Almond imports are from the United States. MY 2019/20 imports are estimated at only 2,200 MT as a result of the slow pace of imports. The January to August 2020 (year to date MY 2019/20) import result of 1,591 MT is well down on the 2,250 MT same period in 2019.

Stocks

Stock levels have been gradually increasing along with increasing production. Ending stock levels are in the range of seven to nine percent of production. According to industry sources, with the marketing year being January to December and harvest commencing in March, the majority of the stocks from the prior year production are cleared in the January to March period, ensuring continuity of supply for the domestic market.

As outlined earlier, the end of year stocks for MY 2019/20 are elevated above typical expectations due to slow exports in the January to August 2020 period.

Almonds, Shelled Basis	2018/2019		2019/2020		2020/2021	
Market Year Begins	Jan 2019		Jan 2020		Jan 2021	
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (MT)	4600	5250	2200	7300	0	11300
Production (MT)	92000	104000	95000	111000	0	120000
Imports (MT)	2100	3100	2200	2200	0	3000
Total Supply (MT)	98700	112350	99400	120500	0	134300
Exports (MT)	72000	71300	75000	75000	0	88000
Domestic Consumption (MT)	24500	33750	22400	34200	0	35000
Ending Stocks (MT)	2200	7300	2000	11300	0	11300
Total Distribution (MT)	98700	112350	99400	120500	0	134300
(HA) ,(1000 TREES) ,(MT)						

MACADAMIA NUTS

Industry Overview

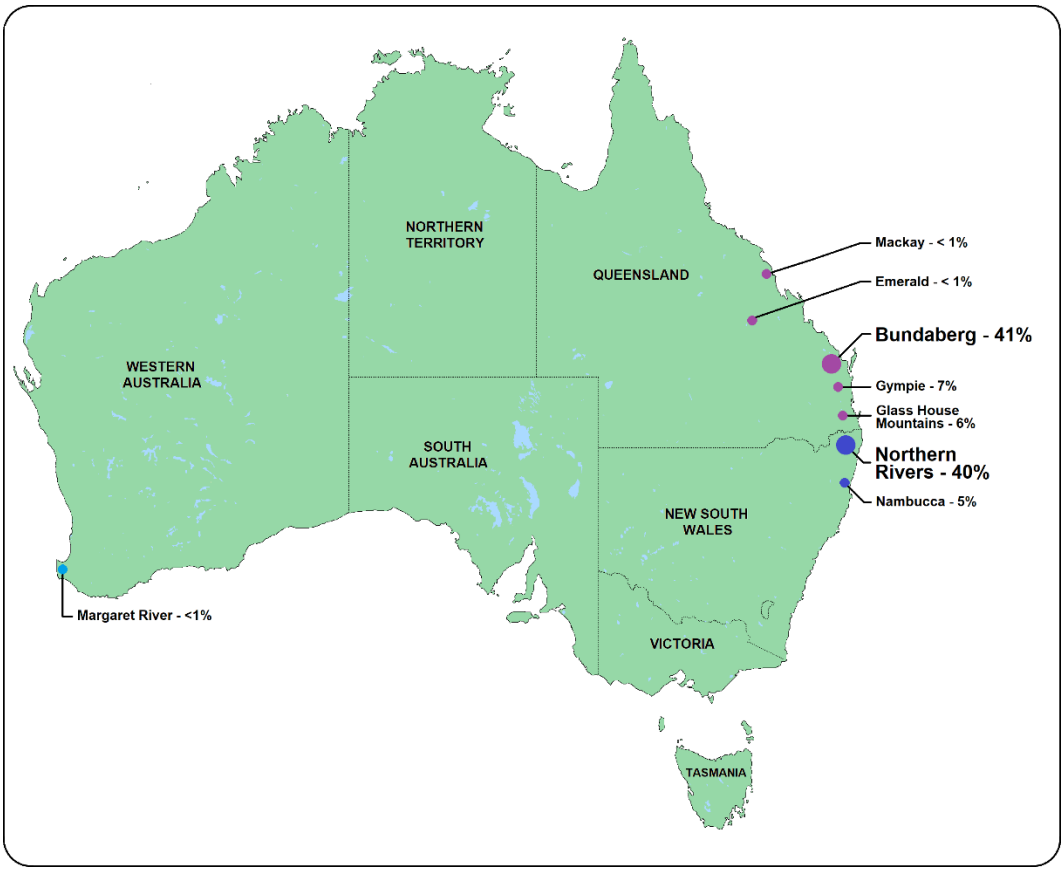
The macadamia tree is indigenous to Australia and native to the subtropical climate in northeastern New South Wales and central and southeastern Queensland.

Unsurprisingly, the major macadamia production regions in Australia are in subtropical climates with one of the two major production areas being near the northern New South Wales coast, known as the Northern Rivers region. Trees here are predominantly rainfed and not supplemented with irrigation. The second major production region is in the central coast of Queensland around the Bundaberg area (see figure 8). This region has a warmer climate with lower annual rainfall and the trees are supplemented typically with drip irrigation. The warmer climate creates greater challenges due to increased tree vigor and size, but the necessity to irrigate also creates the capacity to more closely manage tree nutritional requirements via fertigation. Plantings have been established further north and south of the central coast of Queensland although they are relatively small areas and it is too early to determine if they will be successful production regions fit for further growth.

The interest in the macadamia industry over the last decade is evident from the growth in area planted from 18,000 ha in 2011 to 26,000 ha in 2019 (according to the Australian Macadamia Society (AMS)). The AMS, recognizing the need for improved data, is working with the University of New England in a new initiative to measure horticultural tree areas via satellite mapping. Based on 2017 satellite images validated via on site mapping, the area under macadamias was 30,974 ha. The group is in the process of updating the data for 2020 and industry indicates that the total area in 2020 is now near 33,000 ha.

Industry sources indicate that the growth has generally been at the expense of sugar cane growing areas and is expected to continue in the short to medium term based on recent property acquisitions. A significant acquisition in August 2020 has been the sale of 5,409 ha (with 8,060 million liters (ML) of water entitlements) by Marlborough Sugar Factory (MSF), a sugar cane miller in the Maryborough area in Queensland. This sale was made to Rural Funds Management, who intends to progressively convert the land to a macadamia orchard.

Figure 8 - Macadamia Producing Regions in Australia



Source: Australian Macadamia Society

The industry does not maintain records of the tree age profiles of the current plantings. However, industry sources indicate that there are currently around 25 percent of plantings in the non-bearing age, 10 percent in the maturing production stage, and 65 percent mature and in full production. Once trees reach around 30 years of age their production tends to decline. Industry sources estimate that around 15 percent of the mature trees are greater than 30 years old and are being maintained while macadamia nut prices are high. However, these trees are likely to be replaced with newer varieties in the coming years, particularly if nut prices decline. With the increasing investment in macadamia orchards, the industry anticipates an increase in the proportion of non-bearing trees in the short to medium term of over 30 percent.

Macadamia nut trees originated in subtropical rain forests and prefer deep, well drained, slightly acidic top soils with high organic matter, high rainfall and no frosts. In commercial farmed situations they are typically grown in rows with spacings of four meters between trees and each row is typically spaced eight meters apart. However, growers have a range of planting densities taking into account machinery requirements, soil types, topography and region (warmer regions lead to larger trees size). The

variations in tree spacings are designed to manage tree vigor, optimize canopy area and long-term nut yield.

Mature macadamia nut trees in the wild grow to around 20 meters high and a similar width. However, in commercial farmed situations mature trees are managed to a height of around 7 to 12 meters. There is significant research and development efforts into developing dwarfing rootstocks, which if successful will have an impact on planting densities and the management of macadamia nut orchards. The width of the trees is typically managed by pruning and hedging to ensure that light can reach the entire vertical face of the canopy, enabling the entire canopy face to produce nuts. However, some opt for wider tree spacings and do not prune or hedge. Skirting is also carried out, a practice of removing limbs from ground level to provide access for weed control, fertilizer applications, slashing and harvesting. The trees prefer regions with annual rainfall over 1,000 millimeters (mm), but can be grown in lower rainfall areas supplemented with irrigation.

Similar to other commercial tree nuts, macadamias require cross pollination to achieve nut set. Generally, two cultivars with overlapping flowering times are planted in alternate rows and beehives are brought into the orchards at flowering to maximize the pollination process and optimize yields.

Macadamia trees take around four years before they start bearing nuts but do not reach maturity until around seven years. Flowering typically begins in August-September and nuts mature and fall to the ground from February to August. Prior to the start of harvest, growers clear the canopy floor for ease of mechanical harvesting and occurs at regular intervals (typically three to five times) during the period the nuts fall to the ground. In recent years in the Bundaberg region growers have been transitioning to using shakers similar to those used for almonds to achieve a single harvest each year. Having a shorter harvest period and leaving the trees free of nuts is considered to have numerous benefits, including minimizing pest and disease issues while reducing overall harvest costs, increasing the recovery window for the trees, and better enabling the tree nutrition to be managed in preparation for the subsequent crop.

The fibrous husk is removed within 24 hours of harvesting in order to minimize any deterioration of nut quality. The in-shell nut can be dried and sorted on farm or sent for further processing. The in-shell macadamia is dried to 10 percent from around 30 percent at harvest. The drying process enables the nut to shrink enough to separate from the shell so that the nut is not damaged when the shell is cracked.

Macadamias, similarly to almonds, are sold in-shell or as kernels in accordance to market demands. In recent years around half is sold in-shell and the other half as kernel.

Production

FAS/Canberra forecasts production for MY 2020/21 at 50,000 MT of in-shell macadamias, up 28 percent from the MY 2019/20 estimate of 39,000 MT. The big increase is predominantly a bounce back

after the drought affected production in MY 2019/20, along with increased planted area coming into production.

The east coast of Australia endured a two-year drought across 2018 and 2019. The second year of drought had a major impact on the MY 2019/20 crop, particularly in the Northern Rivers region where most of the orchards are not irrigated.

The industry has been undergoing an expansion phase over recent years and the forecast record 50,000 MT crop for MY 2020/21 is in part due to new plantings increasingly coming into production. Due to the high macadamia nut prices over recent years industry sources indicate that there has been very little of the old less productive trees removed in recent years. The increase in area planted is a close reflection of the area of new plantings.

With reports of ongoing acquisitions of sugar cane area converted to macadamia orchards in both the Northern Rivers region and the central coast of Queensland, along with the time lag of around seven years to reach full production, industry anticipates that there will be a gradual increase in macadamia production in the short term after which more significant increases in production are expected.

Consumption

FAS/Canberra forecasts consumption for MY 2020/21 at 9,000 MT of in-shell macadamias, up 73 percent from the MY 2019/20 estimate of 5,200 MT. This large increase is predominantly due to a bounce back in domestic supply from the low drought-affected production in MY 2019/20.

The lower domestic consumption estimate in MY 2019/20 was influenced by not only the low production but also continued high prices available on the export market which influenced the reduction in supply on the domestic market.

The MY 2019/20 consumption estimate of 5,200 MT is lower than MY 2018/19 due to smaller production.

Trade

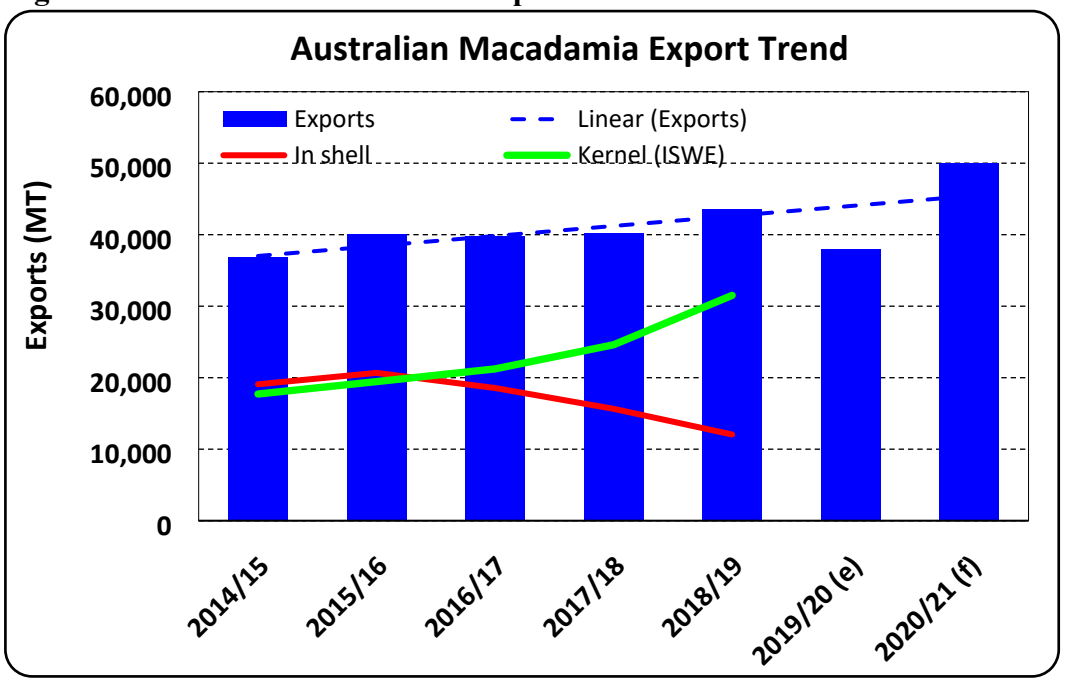
Exports

FAS/Canberra forecasts MY 2020/21 exports of 46,000 MT, a 21 percent increase over the MY 2019/20 estimate of 38,000 MT. The increase of 8,000 MT is driven by the higher expected production. Most of the rising production in the coming years is expected to be exported.

Despite the low estimated production in MY 2019/20, overall exports have been showing a clear increasing trend over the last five years (see figure 9). Interestingly, merely five years ago in MY 2014/15 export volumes were quite even between in-shell and kernels, on an in-shell weight equivalent (ISWE) basis (see figure 9). Since then there has been a clear trend towards the export of macadamia

kernels. In the most recent full year of export data (MY 2018/19) the proportion of in-shell exports had fallen to just over one-quarter of total exports (adjusted on an ISWE basis).

Figure 9 – Australian Macadamia Export Trend



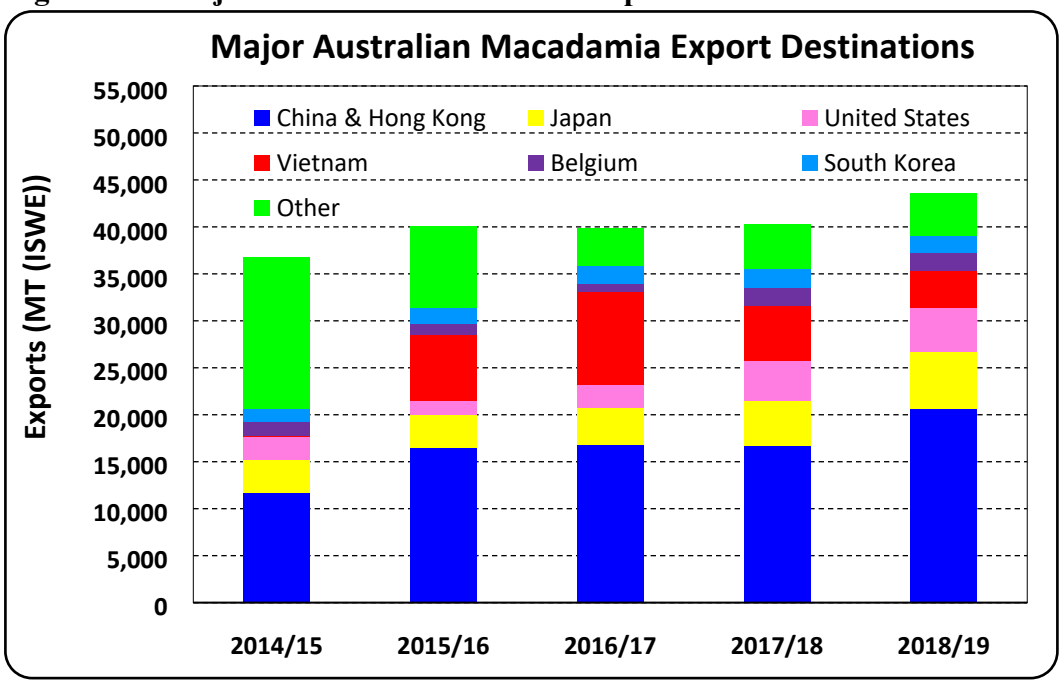
Source: *Australian Bureau of Statistics*
Note: *ISWE = In-Shell Weight Equivalent*

Although Australia exports macadamias to around 30 countries, the major growth destination has been China and Hong Kong, accounting for almost half of total exports in MY 2018/19 (see figure 10). Two other significant export growth destinations have been Japan and the United States, which now account for 14 and 11 percent of total exports, respectively. Exports to Vietnam is the only destination of significance which has shown a decline in trade in recent years.

China and Hong Kong and Vietnam are the only countries with any significant volumes of in-shell exports, representing 99.4 percent of all in-shell exports from Australia in MY 2018/19. Of the total macadamia exports to China and Hong Kong, 43 percent was in-shell.

The MY 2019/20 exports from January to August 2020 are at 28,796 MT ISWE. Taking into account seasonality of exports, the annual export volume estimate for MY 2019/20 is on track to achieve 38,000 MT ISWE.

Figure 10 – Major Australian Macadamia Export Destinations



Source: *Australian Bureau of Statistics*
Note: *ISWE = In-shell Weight Equivalent*

Imports

FAS/Canberra forecasts macadamia imports in MY 2020/21 to recover to 5,000 MT from the estimated decline to 4,200 MT in MY 2019/20. Interestingly, the estimated and forecast import volumes are approximately in line with changes in macadamia production, with higher production resulting in higher imports. This is because a large proportion of Australian imports come from China and are believed to be macadamias that were grown in Australia but sent to China for processing and packaging before being re-imported as kernels.

Stocks

Through industry discussions FAS/Canberra recognizes that ending stocks are held each year. They are confirmed to be small and for reporting purposes they are assumed to be zero. The low quantity of stocks held are due to the combination of low overall production and high world prices for macadamias over recent years.

Macadamia, Wet -Inshell Basis	2018/2019		2019/2020		2020/2021	
Market Year Begins	Jan 2019		Jan 2020		Jan 2021	
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (MT)	0	0	0	0	0	0
Production (MT)	0	46600	0	39000	0	50000
Imports (MT)	0	5700	0	4200	0	5000
Total Supply (MT)	0	52300	0	43200	0	55000
Exports (MT)	0	43600	0	38000	0	46000
Domestic Consumption (MT)	0	8700	0	5200	0	9000
Ending Stocks (MT)	0	0	0	0	0	0
Total Distribution (MT)	0	52300	0	43200	0	55000
(HA) ,(1000 TREES) ,(MT)						

Note: Macadamia volumes are as in-shell equivalents at 10 percent moisture. The conversion from kernel back to in-shell is based on an average 34 percent kernel to in-shell yield, in line with the Australian Macadamia Handlers Association 5 year average from 2015 to 2019.

WALNUTS

Industry Overview

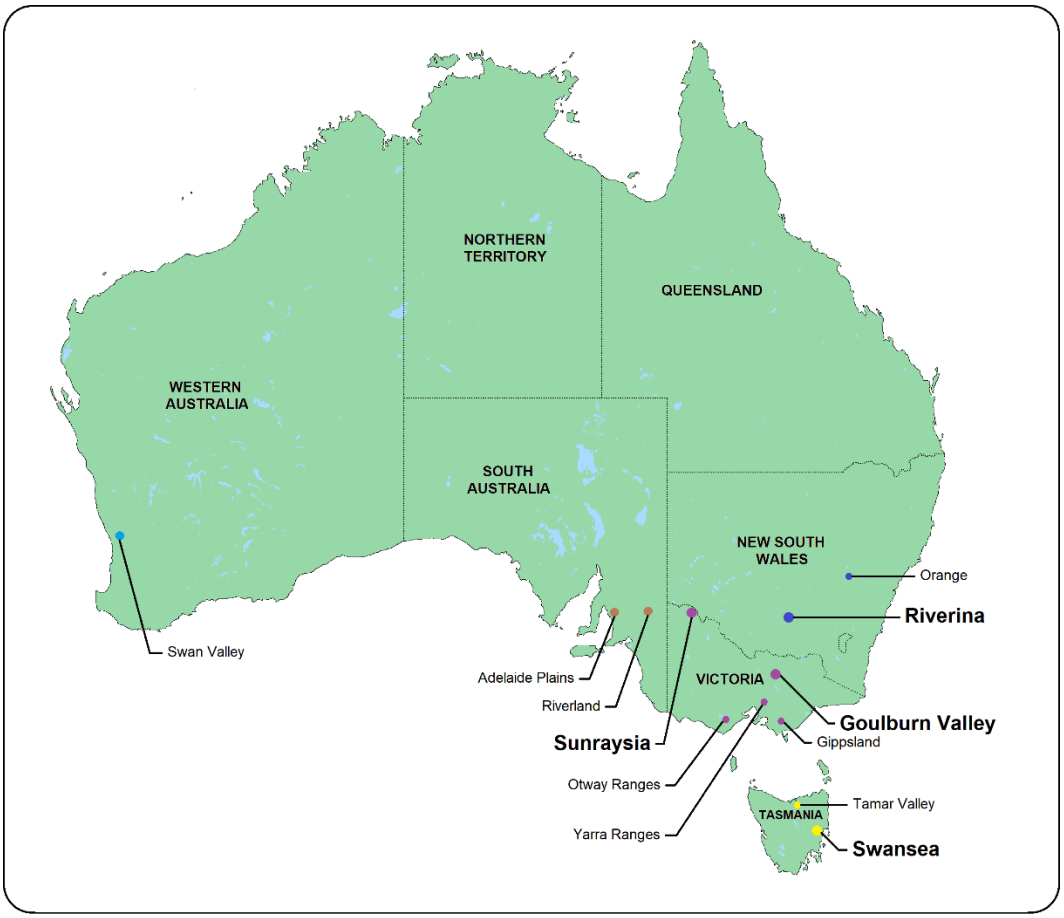
Although walnuts have been grown in Australia for over 100 years, even as recent as 2000 production was merely 150 MT. Since that time there has been significant growth in the industry now producing over 13,000 MT (on an in-shell basis). The industry growth has predominantly been via one large corporate investment which accounts for of around 90 percent of Australia's total production.

Australia produces merely one-half of one percent of world production while the largest producing nations by far are China at around 1.0 MMT followed by the United States at around 0.57 MMT, mainly grown in California.

Walnuts are generally grown in the cooler temperate climates of southern Australia in the Riverina area of southern New South Wales, Sunraysia in northwest Victoria, Goulburn Valley in northeast Victoria and Swansea on the east coast of Tasmania (see figure 11).

Walnut trees require a temperate climate with about 600-800 hours of chilling below 45 degrees Fahrenheit (7 degrees Celsius) and temperatures that do not exceed 100 degrees Fahrenheit (38 degrees Celsius) with low humidity. The trees typically require deep well drained soils with soil pH greater than 6.0. With the combination of improved varieties, and improved agronomic techniques, walnuts in Australia are now able to be grown in sub-optimal conditions. However, as plantings outside the traditional preferred conditions are relatively young, the industry is yet to fully understand the impacts of such things as overall yield potential, variability of production, variances in size quality and flavor from year to year.

Figure 11 – Walnut Producing Regions in Australia



Source: Horticulture Innovation Australia Limited and Australian Nut Industry Council

Walnuts planted in Australia are generally Californian varieties which include Chandler, Howard, Tulare, Serr, Vina, Lara and Ashley. Franquette, a French variety, is also used in Australia. These varieties are typically grafted onto a suitable rootstock, usually American black walnut or Californian black walnut. Walnuts do require cross pollination requiring two varieties with similar flowering times to be planted within the orchard to ensure good pollination. Particularly in more densely planted orchards, pollination is usually aided by bringing in beehives into the orchards at flowering.

Walnut trees typically bear no or very few nuts from year one to five, and from years six to ten increase production and reach a mature yield from year 11. The timeline to production is generally brought forward one to two years in high density orchard plantings with advanced agronomic techniques applied. Walnut trees can remain productive for many decades, although as new and improved varieties are released, high density orchards in particular are likely to replace old varieties at shorter intervals in order to maintain and improve productivity and commercial viability.

Traditionally in Australia, walnut orchard tree spacings with deep soil profiles are typically 15 x 15 meters, allowing trees to grow up to around 20 meters high. The more modern orchards with shallow

top-soil profiles in warmer climates, and with high irrigation requirements, tend to have rows six meters apart with tree spacings as close as three meters apart. These trees are pruned regularly, and tree heights are typically up to five meters.

Frost in mid to late spring during the flowering period can affect nut set and yield, although walnuts tend to have a degree of tolerance to frosts. Rainfalls in spring with humid conditions can cause blight also impacting yield and quality. In Australia this has led to large commercial plantings over the last two decades in somewhat warmer climates with lower rainfall, dependent on irrigation. However, the warmer climates tend to have high temperatures from time to time which exposes walnuts to the risk of sunburn, and the higher average temperatures may limit the development of oils in the walnuts and may impact their flavor.

Australian walnut growers are fortunate to have very few pest and disease challenges with the main issue being walnut blight, a bacterial pathogen mainly prevalent in spring which can be minimized via chemical treatment.

The harvest period of walnuts varies according to climate and varieties. Typically, in the more northern warmer areas harvest commences in March and is completed by May. In the southern cooler climates harvest usually commences in April and is finished in June. Most commercial operations in Australia will use a mechanical tree shaker so that harvest can occur in one pass. After shaking the nuts, they are mechanically swept into a windrow and then collected into bins using a vacuum harvester. At this stage most of the walnuts have a green husk around them and are transported for processing.

The processors first dehull the walnuts before washing to remove any soil and other remaining debris and are then mechanically dried to a moisture content of 8-10 percent. At this point they can be stored for many months before being processed. The largest processing facility is on a large corporate farm in the Riverina region of southern New South Wales who process their own and other grower walnuts. This facility produces in-shell and kernel products and has supply agreements with domestic supermarket retailers and also exports a range of products. There are also other smaller processing facilities located in New South Wales and Victoria.

Production

The forecast production for MY 2020/21 is 13,800 MT of walnuts in-shell, up nearly four percent from the MY 2019/20 estimate of 13,300 MT. The forecast production, if achieved, would be a record after setting an estimated record production in the previous MY 2019/20. The previous record of 13,000 MT was set in MY 2016/17. With one major producer representing around 90 percent of total production, their seasonal conditions and area of maturing trees coming into production has a major bearing on the national forecast. (Note: walnut production estimates are based on Horticulture Innovations Australia (HIA) and the Australian Walnut Industry Association (AWIA)).

Australia's largest walnut producer has multiple sites in New South Wales and Tasmania which assists in spreading production risk from year to year. This producer has over 3,000 ha of walnuts, which are predominantly relatively high-density plantings. The area planted has a tree age profile mix including mature planting (eight or more years), maturing (four to seven years) and non-bearing (one to three years). With an increasing area coming into production, and maturing trees increasing in yield, a production increase of around seven percent per annum over the next few years is a reasonable expectation.

Over the last five years production has increased by around 19 percent from 11,200 MT in MY 2014/15 to an estimated 13,300 MT in MY 2019/20. The industry anticipates a continuing trend of increased production in the coming years although the variables of climate, disease and pest burdens may preclude continued year on year record production from being achieved. Based on the increased plantings over recent years and the tree age profile, industry projections are that production will increase a further 45 percent over the next five years to 20,000 MT.

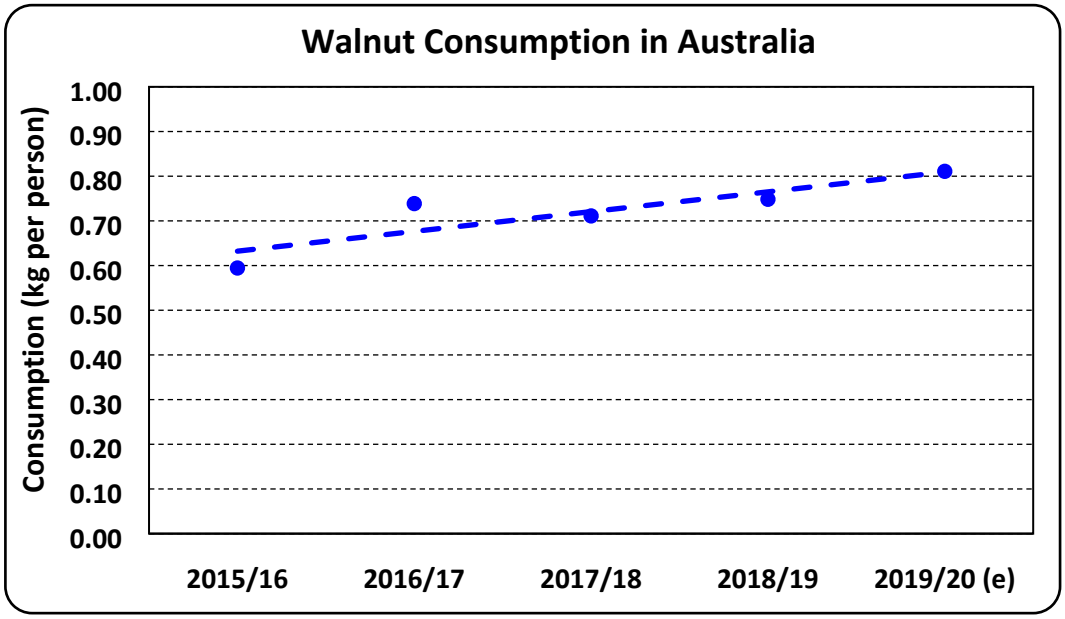
Consumption

FAS/Canberra forecasts MY 2020/21 walnut consumption at 21,100 MT, a small 300 MT increase from the MY 2019/20 estimate. The domestic consumption trend has been increasing due to increased consumer health consciousness and an increasing Australian population. Walnuts are a versatile ingredient used in such things as cereals, snacks, bakery and confectionery.

Consumption has increased from around 0.59 kg per person in MY 2015/16 to an estimated 0.81 kg per person (on an in-shell basis) in MY 2019/20 (see figure 12). It is conceivable that without the impact of COVID-19 on the food service sector in Australia during 2020 the estimated per capita consumption in MY 2019/20 may have increased further. With increasing health consciousness, the rising consumption trend is expected to continue in the coming years.

The MY 2019/20 estimate has been revised up to 20,800 MT from 10,500 MT. This is primarily as a result of improved industry data availability.

Figure 12 – Walnut Consumption Trend in Australia



Source: Australian Bureau of Statistics and FAS/Canberra

Trade

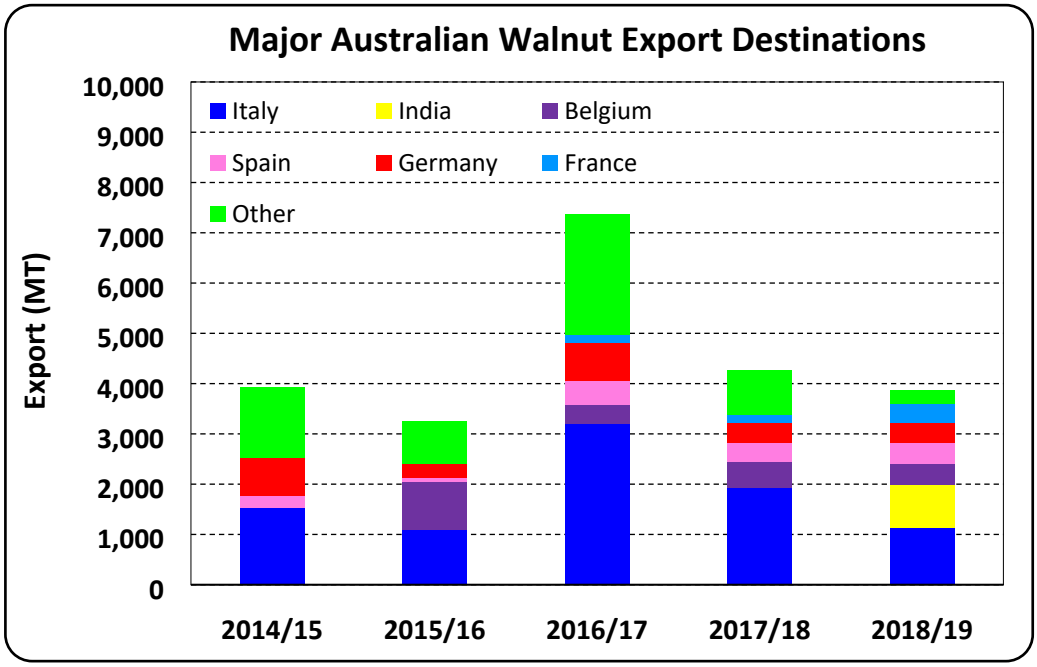
Exports

FAS/Canberra forecasts MY 2020/21 exports of 3,900 MT. This is an increase of 400 MT from the MY 2019/20 estimate, primarily driven by an expected 500 MT increase in production.

Due to overall low production, and Australia being a net importer of walnuts, there are only around 15 export country destinations for Australian walnuts. Almost all of Australia's walnut exports (around 96 percent) are in-shell. Over recent years European countries have been the major export destinations. In MY 2016/17 and 2017/18 Italy was the major export destination representing around half of total exports (see figure 13). In MY 2018/19 exports to Italy declined considerably, however India had for the first time become an export destination for Australian walnuts. In that year Italy and India made up around half of all walnut exports.

In MY 2016/17 China and Hong Kong, Turkey and Vietnam had large spikes in imports of Australian walnuts but have since considerably declined in trade volume.

Figure 13 – Major Australian Walnut Export Destinations

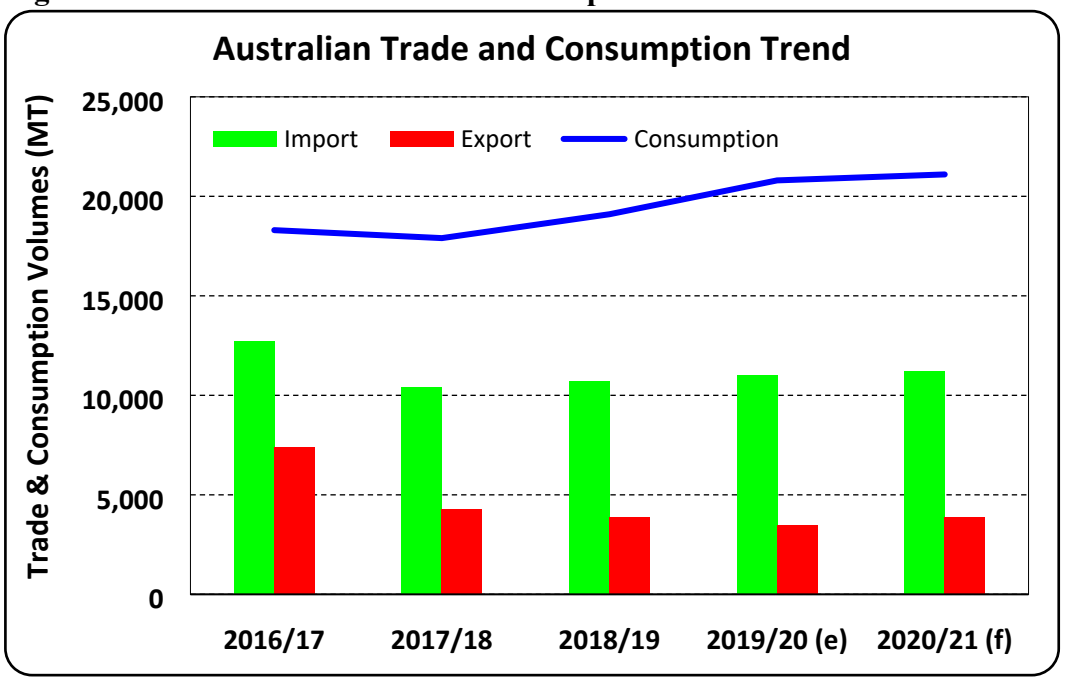


Source: Australian Bureau of Statistics

The MY 2019/20 export estimate is estimated at 3,500 MT. Exports in the January to August period of MY 2019/20 have been marginally lower than previous years and on pace to achieve the estimated export estimate.

In recent years, export growth has not matched Australia's production growth, and more walnuts have been consumed domestically (see figure 14).

Figure 14 – Australian Trade and Consumption Trend



Source: Australian Bureau of Statistics and FAS/Canberra

Imports

FAS/Canberra forecasts MY 2020/21 walnut imports of 11,200 MT, a marginal increase over the MY 2019/20 estimate of 11,000 MT. Nearly all imports in recent years are from California.

The January to August 2020 (MY 2019/20) import result of 7,859 MT is almost three percent up on same period in MY 2018/19 which achieved an annual result of 10,700 MT. On this basis, the MY 2019/20 estimate has been revised up from 10,000 MT to 11,000 MT. Interestingly, the import estimate is up on the prior year despite higher production and lower exports, culminating in higher domestic consumption.

Stocks

Although FAS/Canberra recognizes that ending stocks are likely to be held each year, through industry discussions they are confirmed to be small and industry does not report stock levels. Consequently, for reporting purposes they are assumed to be zero.

Walnut, Wet -Inshell Basis	2018/2019		2019/2020		2020/2021	
Market Year Begins	Jan 2019		Jan 2020		Jan 2021	
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (MT)	0	0	0	0	0	0
Production (MT)	4000	12300	4000	13300	0	13800
Imports (MT)	10000	10700	10000	11000	0	11200
Total Supply (MT)	14000	23000	14000	24300	0	25000
Exports (MT)	3600	3900	3500	3500	0	3900
Domestic Consumption (MT)	10400	19100	10500	20800	0	21100
Ending Stocks (MT)	0	0	0	0	0	0
Total Distribution (MT)	14000	23000	14000	24300	0	25000
(HA) ,(1000 TREES) ,(MT)						

Note: Walnut volumes are as in-shell equivalents at 10 percent moisture.

Attachments:

No Attachments.