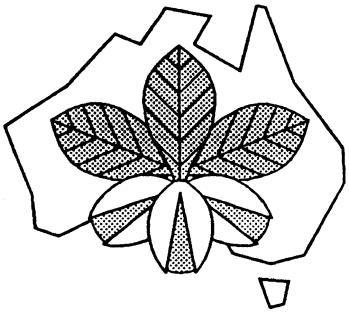

Pistachio Growers' Association Incorporated

Strategic Plan 2011 to 2014

July 2011

The Vision

A highly profitable industry that is sustainable and rewarding for existing growers and attractive to new growers.

The Mission

To produce quality pistachio nuts that excite snack food consumers and satisfy food manufacturers.

Background Information

History
Commercial pistachio growing commenced in Australia in the early 1980's following a successful breeding program by CSIRO, Merbein. The new variety *Sirora* was released and found well suited to the conditions of the River Murray valley.

Current Farming Situation
There are about 40 growers mainly located along the River Murray. Generally, those orchards that have survived the pistachio learning curve and long juvenile phase are doing well. The climate and soils have proven satisfactory for pistachio production.

There is a small number of growers in central NSW where higher rainfall has induced fungal problems. There are a few growers in southern Victoria where lower summer temperatures have limited production. There are growers in Western Australia but only in small quantities.

Expansion of orchards commenced as the recent drought took hold. That drought delayed new plantings. The fungal epidemic of 2011 has further delayed new orchards. There seems to be interest from existing and new growers for further plantings.

Total area planted in 2011 is about 750 hectares.

There are four large mature orchards. Two are each about 140hectares and are both in good production. The other two have long suffered from poor management but new proprietors have produced increases in production with the prospect of further increases.

There are about another ten orchards of 10-15 hectares - the size required to make a living solely from pistachios. The remaining 30 growers each produce less than 5 tonnes dry per annum from 1 to 5 hectares. These are mainly successful growers with mixed fruit blocks. There are very few small "hobby" farmers

A new 70 ha orchard was planted over 2005 and 2006.

Production
This Plan largely deals with the production and marketing of dried pistachios.

There is also a market for fresh pistachios fruit (in hull). Currently sales are estimated at 20- 30 tonnes from 10 to15 small growers selling independently of each other though the fresh fruit & vegetable markets.

Current production is an average of about 1,200 tonnes per annum. This is expected to rise to an average of 1,600 to 1,700 tonnes per annum with peaks to 2,500 tonnes in on-crops and 800 tonnes in off-crop years once all planted trees are at maturity in about 2020.

Farming practices for pistachios are improving and they can be expected to improve further. The yield estimates included in the production projections only assume yields that are currently being achieved. Should the optimum yields be achieved, then average crop size could rise to 2,000 to 2,300 tonnes per annum.

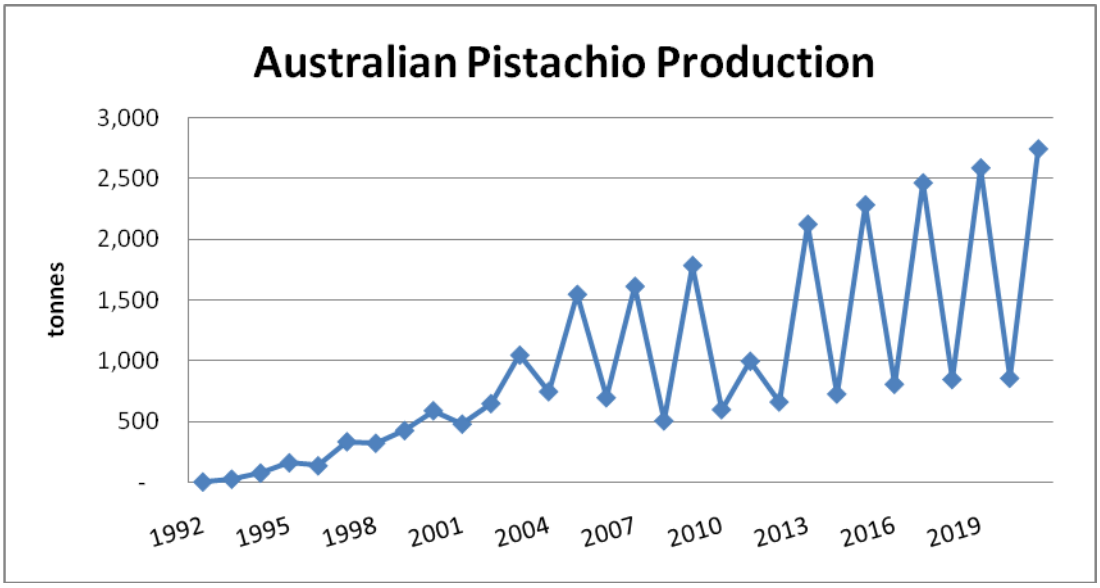

Chart 1: Source: APPC records to 2011 and internal projections to 2021

Production Efficiency

Australian yields per hectare have improved 30% in the last 8 years. Australian orchards now achieve an average of about 3,000kg/ha, over the on/off cycle, peaking at over 5,300kg/ha in the on crop.

Further improvement is possible – the best Californian orchards produce over 6,000kg/ha in the on-crop.

Market

Most pistachio production world-wide is directed at the consumer snack food market rather than the ingredient market. The snack food market for pistachios effectively also buys the shells at the same price! Almonds, peanuts, cashews, macadamias etc all only sell the kernel. About 85% of the Australian crop is sold into the snack market.

There is a small ingredient market that is supplied by the kernels obtained by shelling the non-split and reject in-shells. The Australian *Sirora* variety has relatively

few non-splits compared to most other commercial varieties (<10% compared with ~15-20% in Iran and California). Worldwide, the kernel market is expanding even faster than inshell consumption.

Kernels are typically priced at only 150-160% of the inshell price. To provide equivalent returns to first grade splits, kernels would need to be priced at 220% of the inshell price to cover the shelling costs and the 45-48% kernel yield. Hence supplying the ingredient market is generally not as rewarding for growers as supplying the snack food market. However, kernels are the critical market for grades unsuitable for inshell. Improved demand, and prices, for kernels will lift average returns to growers.

Current (2010/11) Australian consumption is about 3,000 tonnes per annum. This represents a compound growth of about 9% per annum since 2000. There is scope for continued growth. Australian consumption of each cashews and almonds is about 14,000 tonnes per annum. The nut heart health message is steadily becoming better known.

Australian demand is still largely satisfied by imports. Chart 2 shows that present Australian supply only satisfies about one third of total domestic demand.

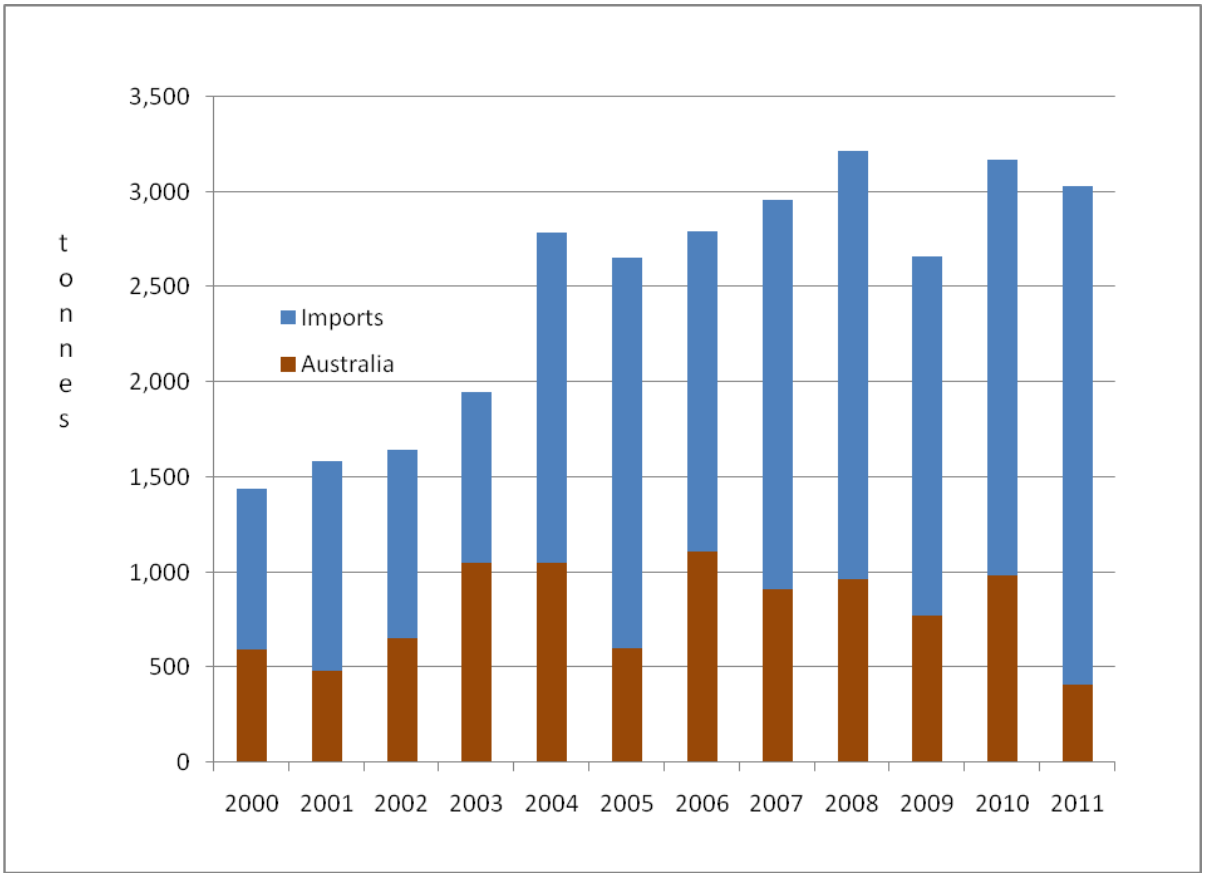

Chart 2: Source APPC and ABS.

Chart 3 assumes domestic consumption growth at only 2% per annum from 2011 forward. Supply of Australian grown pistachios from all existing planted trees is clearly unlikely to satisfy domestic demand.

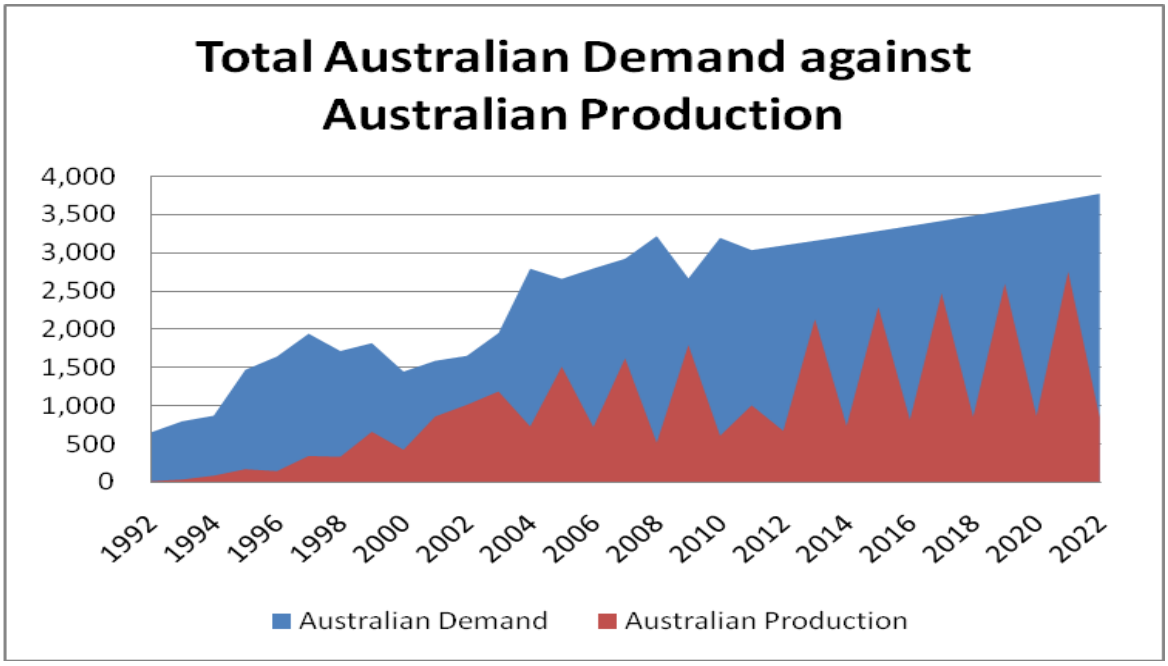

Chart 3: Source: Australian Pioneer Pistachio Company, Australian Bureau of Statistics. Actual data to 30th June 2011, estimated data for 2011 onwards.

The above chart assumes domestic consumption growth at only 2% per annum from 2011 forward. Supply of Australian grown pistachios from all existing planted trees is clearly unlikely to satisfy domestic demand.

To satisfy the projected Australian demand by 2020, about 600 hectares needs to be planted immediately. Australian orchards would need to be doubled.

Recent world supply has been impacted by weather events, particularly a vicious late frost in Iran in 2008. Production in the “other” countries is usually consumed domestically and has little impact on the world trade or prices – the international trade and prices are dominated by the USA and Iran.

World supply will increase dramatically in the teenage years of the 21st century as presently non-bearing USA and Iranian orchards commence commercial production. This increase in production has the probability of impacting downwards on prices in the 2013/2017 period. Presently Iran and the USA are on opposite sides on the on-

off cycle – a weather event could put them back on the same cycle as occurred in 2007. Then annual world production could osculate between 700,000 tonnes and 300,000 tonnes rather than sitting between 400,000 and 500,000 tonnes per annum as currently predicted.

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The history of surges in nut production in the last 30 years has been an over correction downwards on prices for 2 to 4 years. The low prices open new markets and find new consumers. The higher demand drives prices back to, or usually above, the pre-supply surge levels. The underlying demand for all nuts is very strong, albeit it is probably not infinite.

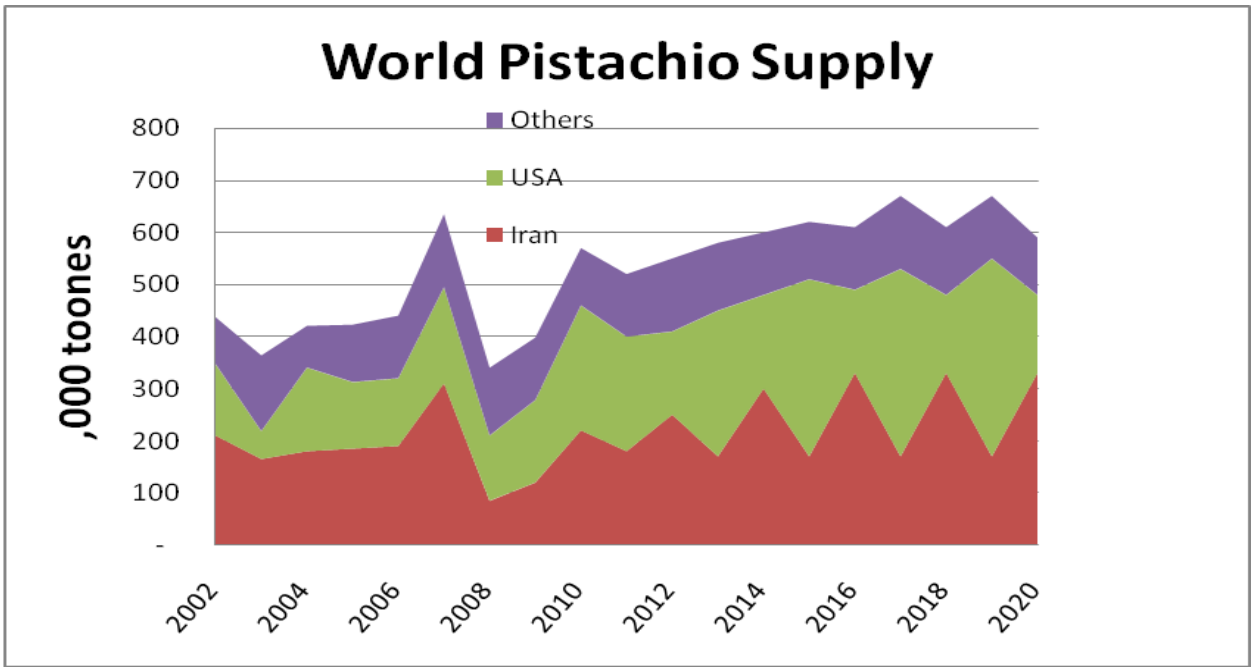

Chart 4: Source: Californian Administrative Committee for pistachios, International Nut Council and industry sources. Actual data to the 2010 season and projections for 2011 onwards.

Australian production has been largely directed at the domestic market. Australian domestic prices reflect the landed cost of imported pistachios, i.e., above the price returns we could expect from exporting to countries such as Europe or China.

The surge in world production in 2013/2017 will impact downwards on Australian domestic prices but probably not to the same extent as the landed cost for imports.

No hard research is available as to the demographics of consumers of pistachios in Australia. Initially the consumers were the migrant families of Mediterranean origin. Pistachios are now a main stream snack nut.

Competitors
The competitors for pistachios are other snack foods generally including chips, confectionery and the other snack nuts, particularly cashews.

As an industry, Australian production "competes" with pistachios from Iran and California. APPC has maintained a competitive pricing policy with imports. The natural tendency of Australians to buy Australian product, provided that it is of similar quality and price, has meant that Australian production has dislodged imports, fairly seamlessly, over the last two decades.

Supply Chain
Almost all growers deliver their crops to Australian Pioneer Pistachio Company (APPC) at Robinvale for hulling, drying, sorting and sale. A few growers hull their own crops and the crops of one or two small neighbours. Many of these growers, after hulling and drying also deliver the crops to APPC for sorting and sale.

A very small number of growers sell their own dry crops. None of these growers has more than 40 tonnes pa of dry nuts. No accurate figures are available.

APPC effectively handles almost the entire Australian crop (>97%).

Most nuts are sold directly by APPC to the major supermarkets (>70%). A minority of the crop is sold through the wholesale nut trade. Almost no dry crop is sold through the fresh fruit markets although these are the major channels for fresh in-hull pistachios.

Most Australian pistachios are sold as roasted and salted in 500gm and 750gm pre-packs in the produce departments of the supermarkets. A minority is sold in bulk.

The two largest growers own APPC. These growers largely run APPC as a cost centre. The stated policy of APPC is to handle the crops of other growers at close to cost to ensure that all Australian pistachios can be presented as a uniform product to the Australian market.

Benchmarks
The PGAI has established a benchmark study across Australian growers. This has indentified better performing orchards and the methods used to achieve the better results.

Whilst Australian growers maintain close contacts with the Californian industry and the world industry, no formal benchmarking international reviews have been conducted. Broad comparisons between published Californian data and Australian results can be made. The best Australian orchards are now achieving results better than average Californian orchards but results probably less than the best of California. There is no data on the performance of Iranian orchards.

Five to ten Australian growers have attended each of the last four Pistachio Short Courses run by the University of California at Davis. The industry researchers also attend those short courses as well as attending the biannual GREMPA Almond and Pistachio Symposium.

Comparisons with Iran, Syria and Turkey are difficult. The climatic conditions, farming techniques and varieties are different to those in Australia.

People and industry resources

The Australian pistachio industry now has several people with over 20 years experience in the growing of pistachios. The industry has an active PGAI Committee (Pistachio Growers' Association Inc). Like all small industries it would benefit if more growers took an active part.

Most growers have had a career experience of growing other horticulture crops such as stone fruits and grapes. Most are "good" farmers.

One of the Directors of APPC has had over 30 years experience in selling of nuts in the domestic and export markets.

A private horticultural consulting firm, Scholefield Robinson Horticulture Services, has taken a strong interest in pistachios and provides extension services to many growers. The various State departments of agriculture have largely withdrawn from this type of grower support over the last decades.

The Victorian DPI had provided support to the pistachio industry. This has now largely lapsed as the industry is unable to provide the required supporting funds for the Department to maintain interest. The other growing states (NSW and SA) and CSIRO now provide little support or interest. The Tasmanian DPI has been appointed as lead agency for pistachios under the National Horticulture Research Network. It is unlikely that pistachios can grow in Tasmania.

The NSW DPI maintains some pistachio trees at its Dareton facility. There is a small research orchard financed by the PGA at the Victorian DPI station at Irymple.

The PGAI has since 2004 employed a Research Field Officer, Dr Jianlu Zhang. The position is supported with matching funds from the Australian government through Horticulture Australia Ltd. This position has contributed to the improvement in nut size, quality and yield of Australian grown pistachio nuts. .

The PGAI encourages attendance at the University of California Pistachio Short Courses, lacking the resources to itself run "how to grow" courses every five years. Attendance on these study tours is supported by the Australian government through HAL.

There are no mentoring programmes; youth encouragement awards; or promotion of any gender bias in who should grow pistachios or participate in the industry association.

Industry Organisation
There is a single, national Pistachio Growers' Association Inc (PGAI). Almost all known growers are members. There is no formal state or regional groups although the Western Australian growers tend to operate such a discussion group for geographic reasons.

Whilst not all growers are *actively* involved with the PGAI, there is no evidence of dissatisfaction with the PGAI or evidence of rival or competitive sub groups being formed.

Almost all growers of dry pistachios support the PGAI Research Fund by way of a voluntary contribution. The usual contribution rate is quite high, $0.12/kg – this is about 3% of the farm gate value. The exceptional circumstances of 2011 caused the members to temporarily increase the contribution to $0.30/kg for three seasons through to 2013.

Only a very small number of growers who sell their crops as fresh in hull pistachios make the voluntary contribution to research. Whilst not a major loss of revenue, it is a major cause of annoyance on equity grounds to the vast majority of growers. The fresh in hull growers sell to the fruit & vegetable markets in a disorganised manner and are treated accordingly.

The PGAI is an active member of the Australian Nut Industry Council (ANIC). The PGAI sees the larger network of ANIC being able to produce better results than a small industry can achieve on its own.

The PGAI has an occasional newsletter that includes professionally prepared seasonal notes. The newsletter keeps growers informed of developments with the research projects and other industry news.

The PGAI website provides growers with links to Californian and Australian research.

APPC issues a market report to all growers annually and monthly to members of the Pool.

Biosecurity
The PGAI has recently become a member of Plant Health Australia and a signatory to the Emergency Plant Pest Response Deed. A Biosecurity Plan is being prepared and an EPPRD levy is being proposed to the industry members with a levy amount set at zero.

SWOT

Strengths

- Providing an Australian bred and grown nut, the Australian pistachio industry is seen as one worthy of support by Australian consumers.
- Pistachios are nuts that provide a healthy snack.
- The large modern facilities of APPC meet all HACCP and health requirements. The industry can present itself as clean and safe. APPC holds SQF2000 and WVQMS registrations.
- All growers have completed and hold SQF1000 or equivalent quality management certification.
- Little evidence of aflatoxin problems – this is a virtue that cannot be loudly claimed without confusing consumers but it is of high value within the trade.
- Good flavour
- Good green kernel colour
- Light shell colour (when mechanically dried)
- High split rate – this is of little benefit to consumers as closed shells are always removed but it is very important to the economics of farming *Sirora* pistachios.
- A near "clean/green crop". No pesticides, few high toxicity chemicals, if any at all.
- Well supported Pistachio Growers' Association.
- Well funded research program
- Unified industry selling and promoting Australian Pistachios through a single channel.
- Good co-operation between small and large growers and strong industry co-operation in general.

Weaknesses

- The heavy alternate bearing cycle of pistachios produce hulling peaks and sales troughs. The swings have become more sever recently creating substantial inefficiencies and higher costs in the capital intensive hulling plant.
- Insufficient information on the detailed nutritional requirements of Sirora variety growing in Australian soils under Australian conditions.
- Too many nuts with shell staining and other damage detracting from profitable returns.
- Some Australian orchards are not yet achieving optimum yields.
- Mechanically harvesting not being efficiently done for some growers resulting in less than optimal yields and less than optimal quality.
- Very slow return on investment combined with adverse tax treatment ensures few investments in new orchards.
- Small industry size that is less than the critical mass required to satisfy the Australian market with no surplus capacity to cover a heavy adverse alternate bearing cycle.

- A single hulling plant provides no alternative should a disaster hit at the beginning of the hulling season. Even if there were more than one huller, it is likely that the total capacity would be stretched in an on-crop so the total loss of any huller would be a disaster to growers serviced by that huller.

Threats

- Complacency. Any moderately successful industry such as pistachios needs to be mindful of competition and danger around the corner.
- A positive detection of aflatoxin in consumer product would be a disaster for the Australian industry.
- The dependence on a single commercial variety, *Sirora*. Any single variety is susceptible to a variety specific pest or disease.
- The lack of a clean, disease free source of bud wood.
- The immediate threat from the *Xanthomonas* bacterial disease has eased but it could return.
- An insect pest could emerge.
- Fungal diseases that have ravaged Californian crops (*Botryosphaeria* and *Alternaria*) are appearing more frequently and causing significant economic loss to affected growers.
- A fungal epidemic such as Anthracnose in 2011 could occur again.
- The old perception that nuts = fat = bad restricts the purchase by some consumers. In fact pistachios largely contain healthy monounsaturated fats.
- Access to reliable supplies of water.
- The incident of allergies to nuts that could cause general fears and a reduction in consumption.
- The rising value of the Australian dollar. Whilst only supplying 30-60% of Australian demand provides some cushion against lower import prices, it does not provide total insulation.
- The surge in world production in 2013-2017 could lower international prices during this period.
- Rising energy costs will significantly impact on hulling and farming costs.
- The efficient application of irrigation water ensures little drainage into the environment, but, this also ensures that all fertilisers remain within the root zone and hence increased risk of the acidification of the root zone.
- Climate change may produce insufficient winter chill for the required pistachio dormancy; drier conditions increase the risk of late spring frosts.

Opportunities

- The youth and inexperience of the Australian pistachio industry ensures continued enthusiasm and open minds to achieve the vision of its participants.
- Expand the demand for Australian *Sirora* pistachios to ensure that it continues to trade at a premium price to imports. The unified Australian industry sales channel provides the possibility for this to occur.
- Continue to expand total pistachio consumption into the wider Australian community whilst maintaining the Mediterranean ethnic base.

- Additional niche export markets exploiting the difference of *Australian*. Such markets can provide the base of an expanded market in the event of an expansion of supply though better yields.
- Exploiting the clean green growing conditions of Australian pistachios.
- Industry expansion could be based on the ability of pistachios to succeed with moderately saline water (up to 4,000 ECUs) and high pH soils.
- To introduce the fresh pistachio fruit to the wider Australian community, apart from the traditional Mediterranean base in which it is well known and prized.
- To prolong the shelf life of the fresh in hull pistachio fruit through research into packaging and the maintenance of the cold chain.
- To develop export markets for fresh in hull pistachio fruit, as the traditional markets are in the Northern Hemisphere and out of season to Australia.
- To include and exploit organic and other non-traditional farming methods.
- New social media opportunities to spread the good news of pistachios.
- Development of improved in field cleaning and partial hulling to reduce transport bulk and the returning of organic matter to the orchards.
- Development of effective storage for in hull nuts to smooth peaks in hulling requirements and reduce the need for additional capital equipment.
- Development of low salt options for roasted and salted pistachios
- Development of Australian based kernel and AO processing facilities.

Major Issues – List

The following list was compiled and below is the list prioritised.

Disease/pests
- Fungal diseases
- *Xanthomonas* bacteria
- Aflatoxin
- Insects

Nutrition
- Nutrition requirements for *Sirora*
- Nut size
- Shell damage
- Kernel fill

Water
- When
- How much
- Deficit irrigation

Winter Chill
- Global warming

Alternate bearing

Pruning & training

Marketing
- Maintain unity in domestic market
- Maintain contact in export market(s)

Marketing Fresh Pistachios
- Develop a coordinated fresh pistachio fruit market.
- Investigate the export of fresh pistachio fruit.

Communication
- Growers

Trees
- New improved varieties
- Alternative rootstocks
- Source of clean budwood

	High $ Impact Action will have measurable $$ returns to industry	**Medium $ Impact** Action may have measurable $$ returns to industry	**Low $ Impact** Action unlikely to have measurable $$ returns to industry
High Urgency /Importance Action needed in next 12 months	Fungal diseases Marketing - Maintaining unity in domestic market	Nutrition requirements for *Sirora* Nut size Shell damage Kernel fill Communication Growers	Communication Growers
Medium Urgency/ Importance Action needed within 3 years	Water - When - How much Kernel fill Alternate bearing	Leaf analysis standards Pruning/training *Xanthomonas* Aflatoxin Insects Global warming	
Low Urgency/ Importance Action needed within 5 years	Insects	Marketing Fresh Pistachios Develop coordinated fresh pistachio fruit market. Investigate the export of fresh pistachio fruit. Trees Budwood Source	Trees New varieties Alternative rootstocks Marketing Export

OBJECTIVES:

OBJECTIVE 1: Develop and maintain market opportunities (volume sold)

Understand consumer and customer needs in domestic and export markets to increase demand for Australian Pistachios.

OBJECTIVE 2: Increase product value (quality and price)

Ensure the price of Australian pistachios is maximised by maintaining a reputation as a reliable supplier of high quality pistachios for different market segments.

OBJECTIVE 3: Improved efficiency and sustainability (costs and risks)

Improve the productivity and international competitiveness of the Australian pistachio industry and protect it from threats.

OBJECTIVE 4: Provide a supportive operating environment (skills and communication)

Support industry development through the enhancement of the operating environment (ie., leadership, skills development, partnership, communication, extension, R&D resources.)

Pistachio Growers' Association Inc has, in order to achieve the objectives, established a number of high level strategies with appropriate action, outputs and industry outcomes. These are detailed below.

OBJECTIVE 1: Develop and maintain market opportunities (volume sold)

Strategy 1.1	**Enhance the capability to build the Australian Pistachio Brand through market and consumer research**
Actions	• Identify priority markets and / or market segments as production levels increase • Conduct analysis of key markets including customer specifications, government/trade requirements and consumer preferences • Develop strategies for marketing Australian pistachios in selected markets segments based on research findings • Collect and analyse ongoing market intelligence and scan data
Outputs	• Market strategy for prioritized markets based on ongoing market intelligence
Industry Outcomes	• Domestic consumption of Australian pistachios grows at 7% per annum • Australian pistachios continue to achieve a significant price premium over imports

Strategy 1.2	**Identify market issues and develop opportunities**
Actions	• Encourage commercial investment in projects to scope research and test the market issues and develop opportunities
Outputs	• Information that supports the development and management of market issues and opportunities

	• Processed pistachios meet all required standards for consumption
Industry Outcomes	• Existing markets are maintained for Australian pistachios • New markets are developed for Australian pistachios

Strategy 1.3	**Research and educate key influencers about the health benefits of pistachios**
Actions	• Work with other Australian and international nut industries to spread the research linking regular pistachio consumption with better human health outcomes. • Support and encourage research into human health benefits associated with pistachio consumption • Support and undertake education programs targeting key influencers
Outputs	• Information packages and educational materials • New consumers are established through appropriate promotional and marketing programs
Industry Outcomes	• Health professionals and other key influencers promote pistachios as a part of a healthy diet.

OBJECTIVE 2: Increase product value (quality and price)

Strategy 2.1	Maintain and improve practices to enhance product quality throughout the value chain
Actions	• Maintain and upgrade industry quality certification program • Continue research into increase of nut size; reduction in shell staining; reduction of narrow splits
Outputs	• A quality certification program
Industry Outcomes	• Australian pistachios maintain their high quality reputation • Continual improvement in appearance and consumer appeal of Australian pistachios to meet and exceed consumer expectations.

Strategy 2.2	Promote food safety practices from production through to consumption
Actions	• Identify food safety critical control points throughout the value chain • Address identified risks by developing technologies and protocols to help eliminate, reduce and / or manage associated risks • Facilitate education and training about key food safety risks, improved product traceability and management protocols
Outputs	• A best practice management program illustrating the critical control points and guidelines for

	managing these risks across the entire supply chain for contamination and management • Food safety simulation exercises with industry participation
Industry Outcomes	• Food safety issues minimised • Australian pistachios maintain a positive food safety reputation

Strategy 2.3	**Develop and enhance the product**
Actions	• Obtain credible data that can be used to differentiate Australian pistachios on the basis of product integrity, food safety, environmental credentials and quality parameters • Conduct consumer research to assess consumer taste and product attribute preferences • Encourage development of value-added products in response to consumer research findings
Outputs	• Credible data packages for the industry to differentiate Australian pistachios • Consumer research data to guide product development
Industry Outcomes	• Customers have access to high value product • Customer confidence in Australian pistachios increased

OBJECTIVE 3: Improved efficiency and sustainability (costs and risks)

Strategy 3.1	Maintain and improve productivity and competitiveness across the value chain
Actions	• Develop practices to optimize:, water use efficiency, nutrition efficiency (and sustainability) • Develop current application methodology & systems for water, nutrition & pesticides to manage & reduce orchard variability • Develop whole of supply chain Integrated Pest and Disease Management program • Review and improve industry processing technologies and procedures • Maintain and review the availability of farm chemicals • Mitigate the impact of heavy alternate bearing
Outputs	• Best practice and technologies for water use, pruning, orchard management, pest and disease management and nutrition • Most current horticulture production systems • A range of approved farm chemicals for use in the growing of pistachios • Processing review document • Industry statistics on yield and cost of production

Industry Outcomes	• Australian pistachio orchards remain highly productive:
	  • Achieve industry average yield of 4.0 T/Ha (4 year rolling average)
	  • Maintain costs of production at best possible levels
	  • Water use efficiency enhanced, as indicated by growers achieving a benchmark figure of at least 280 kg/ML.(4 year moving average)
	• Losses from pest and disease reduced
	• Improved processing efficiency from reduced biennial bearing

Strategy 3.2	Safeguard industry production and marketing systems from potential biosecurity threats
Actions	• Ongoing assessment and prioritizing of biosecurity threats to pistachio production • Support the monitoring of the pistachio industry for the presence of exotic pests and diseases • Develop and review incursion management plans including appropriate quarantine measures • Train industry in the use of incursion management plans • Work with other nut and other horticulture industries on Biosecurity
Outputs	• Pistachio Biosecurity Plan • Owner re-imbursement costs appropriate to the Pistachio Industry • On-farm Biosecurity manual for the pistachio industry • Pistachio industry biosecurity crises response management program encompassing both production and pollination • National pistachio exotic pest and disease surveillance and reporting network • Consistent, up-to-date protocols for testing imported seed, budwood and trees for exotic and endemic pests and diseases • Simulation workshops for exotic diseases (enhanced and continued)
Industry Outcomes	• The pistachio industry is protected from biosecurity threats. • If an incursion was to occur, damage is minimised • If an incursion was to occur appropriate owner re-imbursement is made to growers

Strategy 3.3	Support sustainable pistachio production
Actions	• Develop practices to encourage sustainable soil health • Assess the impact of climate variability and climate change on pistachio orchards • Investigate alternative uses of processing waste, i.e. husks and shells
Outputs	• Best practice soil health management technologies • Report developed to assess pistachio production in relation to potential climate variability and climate change scenarios • Reports on actual annual winter chill and recommendations on how to mitigate insufficient chill. • Review to evaluate alternate uses for processing waste, including financial assessment of alternatives
Industry Outcomes	• Soil acidification / salinity mitigated. • Industry practices enhance promotion of soil biology • Australian pistachio industry's carbon and environmental footprint reduced • The value of pistachio husks and shells is increased to reduce hulling costs.

Strategy 3.4	Facilitate access to required plant material
Actions	• Evaluate promising cultivars and rootstocks • Support the development of cloned rootstocks • Establish a pistachio nursery accreditation scheme

	• Source of clean budwood • Develop and promote recommended rootstock propagation protocols for use by nurseries • Establish and sustain a secure cultivar and rootstock pistachio germplasm repository
Outputs	• Plan developed for the introduction of promising cultivars and rootstocks • Clean Budwood • Tree accreditation scheme developed • Rootstock and cultivar propagation protocols developed • A secure pistachio germplasm repository
Industry Outcomes	• The pistachio industry is provided with future variety and rootstock options

OBJECTIVE 4: Provide a supportive operating environment (skills and communication)

Strategy 4.1	**Enhance skills and capacity to support current and future industry needs**

Actions	• Facilitate and support initiatives to develop:
	  • Young leaders
	  • Research capacity
	  • Skills base across the industry
	  • Secondary and tertiary students following a career in horticulture
	• International study trips organised and industry involvement encouraged

Outputs	• Retention of Research Field Officer • Technical capacity through government and private research facilities • Training programs for industry stakeholders • Career days, field days and information sessions to promote pistachios and horticulture to students and teachers • International study trips
Industry Outcomes	• Industry capacity is enhanced through increased skills development.

Strategy 4.2	**Develop and deliver effective R & D programs that support the Strategic Plan**
Actions	• Prioritise strategies and actions requiring R & D projects • Calculate projected funds from statutory levies and voluntary contribution funds

	• Identify strategic partners to better leverage funds • Implement the plan by appointing R & D providers for priority R & D projects • Monitor and evaluate implementation of the R & D Strategic Plan via a formal review • Monitor skills required for each of the strategic committees and address any gaps
Outputs	• Strategic Plan for the Australian Pistachio Industry • Project briefs for all priority strategies within each Objective • Processing sub-committee established • Evaluation Reviews of R & D Strategic Plan (Years 3 and 5)
Industry Outcomes	• The industry has a strong R & D plan • The R & D projects commissioned achieve the Outputs

Strategy 4.3	**Support adoption of R and D outcomes by effective extension**
Actions	• All R & D projects to include an adoption plan, budget and resources allocation for extension and technology transfer • PGAI is to be written into all project applications to ensure active involvement in the extension process • Develop demand driven publications, products and services
Outputs	• Extension publications, products and services, including fact sheets, field days, workshops and training sessions • Project updates included in newsletters • Final project reports available on the PGAI website

	• Regular survey of stakeholders to evaluate technology transfer • Analysis of technology transfer
Industry Outcomes	• High level uptake of. R & D outcomes by industry

Strategy 4.4	**Facilitate the two-way flow of information through the value chain**
Actions	• Ongoing collection and dissemination of industry statistics • Develop and implement a communication strategy • Fostering opportunities for value chain interaction through industry Field Days and the Australian Nut Industry Conference • Evaluate the effectiveness and appropriateness of communication practices
Outputs	• Publications disseminating industry statistics • Communication initiatives including website updates and e-newsletters • Annual communication effectiveness survey
Industry Outcomes	• Proportion of stakeholders accessing the PGAI's website increases • All stakeholders across the value chain are informed and engaged • Decision making across all areas of the pistachio supply chain are supported through access to timely and relevant information • Industry statistics are up-to-date and readily available in a range of formats

Strategy 4.5	Enhance the interests of the Australian pistachio growing industry
Actions	• Work with other nut growing industries • Work with other horticulture industries • Work with other agriculture industries • Evaluate the effectiveness and appropriateness of communication practices
Outputs	• The environment to pursue sustainable, profitable pistachio farming in Australia
Industry Outcomes	• All Australian Pistachio growers are profitable and sustainable within all situations