



## Market access

Delivering on our key outcome of market access for primary industries means:

- maintaining access to current markets and gaining access to new markets
- maintaining confidence in the safety and quality of Queensland products
- facilitating reinstatement of market access after market closure
- creating a regulatory environment that strikes a balance between maximising industry benefits and minimising costs for business.

### Market access scorecard 2007–08

Industry	Horses	Fishing	Citrus	Fruit
<b>What we planned to do in 2007–08</b>	Contribute to national emergency preparedness and response plans for high-priority animal biosecurity threats	Develop breeding technologies and animal biology for tropical marine finfish by June 2008	Implement area freedom surveillance systems and inspect for high-priority pests including citrus canker	Identify one mango bioactive fraction using cell-based assays by June 2008
<b>What we achieved</b>	Equine influenza eradicated over a seven-month period	Conducted groundbreaking research on farming commercial quantities of tropical reef fish species	180,000 citrus trees replanted after successful response to citrus canker outbreak and stringent inspections of source nurseries	Ensured the highest value consumer foods by examining chemical, biological and physical food properties from farm gate to plate
<b>Progress against MPS targets*</b>	Target: 6 Actual: 6 Measure: State and national arrangements managed for responses to large scale exotic and endemic pests and diseases	Target: 74 Actual: 66 Measure: Systems standards tools for improved production efficiency	Target: 6 Actual: 6 Measure: State and national arrangements managed for responses to large scale exotic and endemic pests and diseases	Target: 12 Actual: 10 Measure: Innovative technologies developed
<b>What we plan to do in 2008–09</b>	Build Queensland's capacity to respond to emergency pests and diseases	Facilitate technology transfer of tropical marine finfish production methods to industry by June 2009	Develop surveillance systems in accordance with relevant standards and plans	Develop one new cell-based assay for mango bioactivity by June 2009

\* For more information on MPS targets, refer to overall performance scorecard on pages 16–21.



### Mobile response fleet another weapon in fight against pest and diseases

Queensland's battle against plant and animal pests and diseases has been boosted by a fleet of Biosecurity Queensland response vehicles designed to equip DPI&F staff to better respond to outbreaks—both at the incursion site and at checkpoints during a stock standstill or quarantine situation.

With time being the enemy in an outbreak, a quick response can be vital to containing pest or disease incursions and can save millions of dollars during an eradication campaign. The vehicles help to speed up response times, and mean staff can get on with the job equipped with all the necessary resource support.

The vehicles, which have a range of modern equipment, the latest wireless technology and digital cameras for quick transfer of images back to laboratory experts, can be used in conjunction with specially equipped emergency response trailers located at various centres throughout Queensland. The trailers have a comprehensive range of supplies including animal and plant sampling equipment, a generator and pressure washers for decontamination.

### Citrus replanting ready to roll in Emerald

1 July 2007 marked a much-anticipated milestone for the National Citrus Canker Eradication Program, with commercial citrus trees allowed back into the Emerald district for the first time in three years. While this is a big step forward, much hard work remains before citrus canker is confirmed as eradicated from Australia.

DPI&F and its national funding partners have invested millions of dollars and thousands of hours to ensure a sustainable, productive and profitable citrus industry can continue in Emerald. As a result, growers were allowed to bring approved planting material into the Emerald Pest Quarantine Area and start replanting commercial citrus orchards.

Around 180,000 trees have been planted so far, after first passing stringent inspections by DPI&F inspectors at source nurseries outside the Emerald Pest Quarantine Area to confirm they were disease-free. All replanted orchards in the Emerald Pest Quarantine Area are being monitored for signs of citrus canker, with inspections of the replanted trees being conducted every 90 days until the end of 2008. As extra protection, backyard planting of citrus trees will only be allowed once eradication is officially declared in early 2009.



### Arabian stud horse exports continue despite equine influenza

Trade in Arabian endurance horses to the United Arab Emirates is big business for Queensland. Arabian stud horse exports are worth tens of millions of dollars to the state's economy each year, and the industry employs around 100 people, including training staff, vets and farriers. During the 2006–2007 racing season, Australian horses won 13 of the 17 races held in the United Arab Emirates, with 12 of the 13 winning horses being from Queensland—furthering demand internationally.

Understandably, the outbreak of equine influenza in August 2007 represented a major challenge for Arabian stud horse exports. DPI&F's work with leading exporters and Queensland's non-racing sector to eradicate equine influenza over a seven month period resulted in the United Arab Emirates reopening their markets to Australian horses in March 2008 with minimal changes to quarantine requirements.

### Keeping Australia free of mad cow disease

'Mad cow disease', or bovine spongiform encephalopathy (BSE), was first detected in the United Kingdom in 1986, causing major disruption to cattle trade and a huge decline in consumer meat consumption. BSE is a chronic degenerative disorder affecting the central nervous system of cattle. As the disease progresses, the brain starts to look like a sponge, hence the term 'spongiform'.

BSE belongs to a group of diseases known as transmissible spongiform encephalopathies (TSEs). The group includes scrapie, which affects sheep and goats and has symptoms similar to BSE. Currently, there is no cure for BSE or scrapie. The spread of BSE and scrapie to other countries is attributed to exports of meat and bone meal or live animals.

The presence of these diseases in Australia would seriously affect export and domestic markets for beef and sheep products. Australia has a national TSE surveillance program jointly funded by industry and government to ensure Australia remains free of BSE and scrapie. DPI&F is responsible for ensuring adequate surveillance measures are taken in Queensland to safeguard our vital beef and sheep industries and maintain our ability to trade internationally. Biosecurity Queensland veterinarians and inspectors are involved in sampling animals with possible symptoms of BSE or scrapie to rule out the disease and overseeing the implementation of the national ruminant feed ban and imported animal quarantine and surveillance schemes.

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### Bee-eating birds help with Asian honey bee surveillance

Asian honey bees (*Apis cerana*) have the potential to introduce a devastating threat to Australia's honeybee industry, by playing host to a serious bee mite (*Varroa destructor*). Australia is one of the few countries free of the bee mites, which are common in countries to our north including Papua New Guinea and South East Asia.

As part of ongoing surveillance activities during 2007–08, Biosecurity Queensland staff worked with Australian Quarantine and Inspection Service to use an innovative yet proven technique to look for evidence of Asian honey bees, which takes advantage of the habits of a native rainbow bee-eating bird. DPI&F staff identify bird roosting areas and collect pellets of bee remains regurgitated by the birds. The pellets are then examined by DPI&F laboratory staff for the unique wing remnants of Asian honey bees. The location of bird roosting areas and their flying direction assists in tracing any remaining hives.

In May 2007, after Asian honey bees were found in the Cairns area, Biosecurity Queensland managed to destroy all identified nests within a three-week period. Through its ongoing surveillance program, DPI&F hopes to quickly identify and treat any further infestations of the Asian honey bee, and work towards giving industry and trading partners confidence about freedom from this pest.



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## **Aquaculture technology boosts reef fish export industry**

With increasing scrutiny and tightening regulation surrounding commercial fishing of Queensland's prized tropical reef fish, groundbreaking research by a team of DPI&F scientists on how to reliably farm commercial quantities of these species is providing the state's aquaculture farmers with opportunities to boost profits and reduce risk.

Queensland's iconic tropical reef fish are highly valued because of their rarity and beauty and are treasured both as a tourist attraction and delicious commercial seafood for locals and importers. Increasingly strong international demand for most of our tropical reef fish species ensures a healthy live-fish export market, with 60% of international trade being exported to Hong Kong worth in excess of US\$350 million. Current research has focused on groupers, including coral trout, flowery and gold-spot grouper, with many breakthroughs being achieved.

### ***Coral trout***

Australia's first-ever juvenile coral trout, a vibrant red and blue fish, was bred and grown by DPI&F scientists using aquaculture farming. Coral trout can command up to \$80 per kilo within Australia and up to \$130 per kilo during peak times on the live export market, representing exciting opportunities for farmers.

### ***Flowery grouper***

For the first time in Australia, DPI&F has successfully reared flowery grouper fingerlings and is performing growout trials to better understanding optimum growing conditions, feed types and quantities, and harvest size and times to maximise productivity and profitability.

Flowery grouper can command up to \$20 per kilo and, in a Queensland first, aquaculture product was commercially sold to the Sydney live-fish markets. Flowery grouper fingerlings are currently being produced to supply to farms for industry production.

### ***Other groupers***

Together with industry partners, DPI&F is growing tens of thousands of gold-spot and flowery grouper. DPI&F is also working with local fishing associations and port authorities to collect broodstock of giant grouper, known locally as Queensland groper (a rare and protected species), and will then attempt to rear larvae and explore commercial production.

By farming commercial quantities of Queensland's tropical reef fish, DPI&F is developing an environmentally and biologically sustainable local aquaculture industry and export market for the future.

## Asian green mussels under control in Cairns **Mango science**

Most of the 200 or more marine pests reported in Australian waters have been introduced accidentally by shipping and aquaculture activities. In December 2007, Biosecurity Queensland identified marine pests—Asian green mussels and Asian bag mussels—from a vessel's hull in Cairns. Both Asian mussel species pose a threat to native biodiversity, commercial fisheries and aquaculture industries, greatly increase maintenance requirements for vessels, and may also interfere with port activities. Since the detection, Biosecurity Queensland worked with stakeholders to initiate a response plan, surveying, slipping and inspecting vessels to determine the likely source and extent. Efforts to determine and contain the source of the incursion were balanced against the need for the port to continue operations.

A further Asian green mussel was detected in January 2008 with its age indicating a spawning event late in 2007. To limit possible spread of these invasive species from Trinity Inlet, an Asian mussel quarantine area was declared under the *Fisheries Act 1994* to allow Biosecurity Queensland to continue inspecting and treating high-risk vessels. The Asian mussel quarantine for Trinity Inlet was lifted on 30 May 2008.

Since mid-January 2008, no additional Asian mussels have been found within the quarantine area; however, ongoing monitoring in Trinity Inlet will continue, with the public urged to contact DPI&F to report any suspect sightings.

To DPI&F food scientists, a mango is never just a mango. To ensure the highest value consumer foods, food science examines the chemical, biological and physical properties of food from the moment it is picked to the moment it is eaten—or from 'the farm gate to plate'. In the case of mangoes, research is investigating which compounds are important to flavour, where they come from, what flavours they generate and how this affects consumer appreciation. Understanding the differences between people in their flavour preferences helps target products to the right markets and indicates gaps where breeders can enhance a particular flavour to help differentiate new products. Health benefits are also under the microscope, with foods such as mango being assessed for nutritional and physiological benefits. This is just one way that DPI&F is adding value to Queensland's agricultural products and ensuring consumers are provided with better tasting, healthier and higher quality foods.

## Protecting our plants and borders

During 2007–08, DPI&F's plant biosecurity staff worked with industry and other state and territory governments to maintain access to domestic markets and minimise the impacts of revised domestic quarantine entry requirements for Queensland produce. The eggplant and table grape industries were impacted by new Victorian entry conditions for fruit fly, and the nursery and garden industry were impacted by revised entry conditions for nursery stock into Western Australia. As a result of DPI&F's work, new or revised quarantine measures were enacted to protect Queensland's plant industries from significant pests and diseases, including sugarcane smut, mango leafhopper, mango leaf gall midge, Asian sugarcane planthopper, branched broomrape and potato cyst nematode.

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## Future directions

### Biosecurity: a blueprint for the future

Those who think biosecurity isn't important may not have encountered the devastation caused by fire ants, red-eared slider turtles, citrus canker, sugarcane smut, tilapia, locusts, wild dogs, equine influenza and a long list of other pests and diseases. With many other potential threats on the horizon, and major biosecurity incidents becoming more frequent around the world, Queensland cannot afford to be complacent.

Biosecurity involves not only protecting our agriculture, but also managing negative impacts on other industries, our natural and built environments, our biological diversity, human health and our cultural heritage. This is a Queensland Government priority. As such, DPI&F is developing Queensland's first biosecurity strategy to protect our economy and unique environment from the negative impact of pests, diseases and contaminants. To guide the direction of the five-year strategy, DPI&F has already released a discussion paper outlining the challenges affecting the future of biosecurity in Queensland and a vision for the future, with a report on feedback to be released in late 2008. The strategy will:

- articulate a vision and outcomes for a modern, integrated biosecurity system, taking into account obligations to national biosecurity priorities
- set broad policy principles, and identify areas for immediate and longer-term action
- describe the roles and responsibilities of key stakeholder groups including government, non-government, industry and community
- define how success will be evaluated and reported.

Fortunately, Queensland is well positioned to build a world-class biosecurity system, having already received recognition for many of its biosecurity achievements, including DPI&F's recent equine influenza outbreak response. While we cannot mitigate against all biosecurity threats, we can reduce the likelihood of many biosecurity incidents occurring and we can reduce the negative impacts should they eventuate. Queensland's biosecurity strategy will help us continually build on our experiences to enable a confident response to the biosecurity challenges of the future.

## Trade development

Delivering on our key outcome of trade development for primary industries means:

- creating new trade opportunities
- gaining, maintaining or increasing market share in existing, new or diversified markets
- creating new or tailored products for existing or new markets
- facilitating diversified sources of income for enterprises.

### Trade development scorecard 2007–08

Industry	Mandarin	Sugar
<b>What we planned to do in 2007–08</b>	Increase access to national and international markets	Develop one new bioactive extract from sugar by December 2007
<b>What we achieved</b>	Exports to Queensland citrus to China have tripled since the first containers of Honey Murcott mandarins were shipped in 2006	DPI&F is involved in designing a process which removes woody sugarcane rind and leaves behind high quality pith containing antioxidants and fibre
<b>Progress against MPS targets*</b>	Target: 40 Actual: 52 Measure: Major trade development activities	Target: 12 Actual: 10 Measure: Innovative technologies developed
<b>What we plan to do in 2008–09</b>	Continue to work with food and agribusiness companies along the supply chain to facilitate increased trade and exports	Publish the identification of three bioactive polyphenolic compounds in sugar extracts by June 2009

\* For more information on MPS targets, refer to overall performance scorecard on pages 16–21.

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### Australian mangoes a top gift, says China

Australia's top quality mangoes are finding their niche in China's competitive gift market, with a new quarantine arrangement resulting in the first consignment of mangoes being exported direct to Shanghai in December 2007 in time for Christmas and Chinese New Year. This breakthrough export of Australian mangoes to China will open up more doors for Queensland mango businesses keen to tap into this lucrative trade opportunity, with the retail value of exports estimated to be more than \$300 million.

Until now, Australia has been unable to export mangoes directly to China because of their strict quarantine requirements for mango seed weevil and fruit fly. To meet China's quarantine standards, mangoes were subjected to vapour heat treatment and inspectors painstakingly cut and checked about 5,000 fruit from each orchard submitted for registration for export to China. DPI&F is continuing its mango seed weevil research to improve control of the insect, and has already mapped infestation hotspots and performed field trials of soil-applied chemicals.

DPI&F has conducted research to capitalise on this significant new trade opportunity, meeting with Chinese consumers, importers, wholesalers, distributors and retailers to better understand their awareness, perception and potential acceptance of Australian mangoes. While our mango varieties were not well known, the Chinese liked the size of the R2E2, colour of the Calypso™ and flavour of Kensington Pride. The seasonal advantage and yellow and red colours typical of our mangoes make them a real winner for the Chinese gift market.

The success of these initial consignments will lead the way for export of more mangoes in the future, and lessons learnt will be transferable to other export products into China and other important markets such as Korea, Japan, Malaysia, Singapore and Thailand. The export program is the result of six months of negotiations and planning with a range of mango businesses, industry organisations and Commonwealth funding bodies.

This project was a DPI&F Asian Markets for Horticulture Initiative under the Queensland Government's Blueprint for the Bush. Funding contributors included Horticulture Australia Limited, the Australian Mango Industry Association, the Air Freight Council of Queensland Ltd, and the Australian Centre for International Agricultural Research. Business collaborators included Manbulloo Mangoes, One Harvest, Global Rewards, Carter and Spencer Group, AgriExchange, Diamond Star and Delis Nominees.



### **Citrus a significant export market for Queensland**

Queensland citrus has a 'foot in the door' to significant export markets in China, where rapid economic growth has led to an increased demand for quality imported fruit. Exports of Queensland-grown citrus to China during 2007 have tripled since the first containers of Honey Murcott mandarins were shipped out in 2006. Australia has a strong advantage over other exporters, being able to supply mandarins at a time when there is limited supply from domestic producers in China and other overseas countries.

Further market growth is expected as a result of DPI&F's research into citrus black spot, new fruit fly treatments and mango seed weevil, which could open up profitable export markets in the United States, New Zealand and additional Asian locations. Citrus black spot infection has been reduced to less than 1% of fruit, thanks to an effective field control system developed by DPI&F. Research is continuing to totally eradicate the disease through in-field management and post-harvest treatment so strict pest and disease management requirements for exporting can be met. Continuing to establish Queensland as a competitive supplier of high quality citrus exports is a high priority of DPI&F's successful \$1.5 million Asian Markets for Horticulture Initiative.

### **Queensland flowers on track to bloom in Japan**

The profitability of Queensland flower and foliage exports to Japan is growing, with DPI&F supporting a Queensland industry delegation visit during 2007.

Currently, most Queensland flower and foliage companies sell their product to Japan on open auction to the highest bidder, which does not offer the best returns. The visit aimed to secure potentially better prices for Queensland product by exploring opportunities for direct pre-selling, and promote the diversity and quality of our home-grown flowers and foliage.

While in Japan, the delegation attended the 2007 International Flower Expo in Tokyo, and visited key importers and distributors in the Japanese flower supply chain. Positive discussions were undertaken with an auction house on opportunities for direct selling and specific promotions. As a result, auction house representatives have visited Queensland to continue discussions. Companies who participated in this mission have already received a number of trade enquiries and are using their market findings to improve their market entry strategies.



### The world comes to Queensland's doorstep

In 2007–08, DPI&F facilitated 52 official trade missions, of which 43 were inbound missions from countries including Japan, Korea, Indonesia, Taiwan, Thailand, China, Malaysia, United Kingdom, United Arab Emirates, Brunei, Vanuatu and New Caledonia. These missions built valuable networks, increasing potential for future trade and investment opportunities for horticultural products (e.g. mangoes and lychees), retail food and food ingredients, organic and value-added macadamia nuts, sheep and goat meat, forestry, and production technologies, as well as training and consultancy in lifestyle horticulture services and livestock genetics.

### Virtual exports for natural products

Trade development has gone high tech, with a virtual trade conference held in September 2007 that focused on Queensland's natural products industry, providing an extremely cost-effective way to connect overseas buyers from Hong Kong with 12 prospective local exporters.

The natural products industry (comprising organic, functional and nutraceutical sectors) is still emerging worldwide, with natural products in Queensland still developing and small in scale. Biological Farmers Australia's *Australian organic market report 2007* estimates the retail value of the organic industry (incorporating imports and adjusting for exports) to be more than \$0.5 billion. There have been reports of between 10% and 30% growth per year for some sectors since 2004, with about 66% of organic farmers being involved in horticulture.

During the year, DPI&F partnered with 14 companies to promote a range of natural products at the Queensland Export Showcase 2007, including healthy snacks, natural/organic products, health drinks and the new Calypso mangoes. The contacts made by the companies with the Queensland Overseas Trade Commissioners will be valuable for future business matching.



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## Life is sweet: developing healthy and viable sugar by-products

Together with Australian and international collaborators, DPI&F scientists are working on a range of natural sugar by-products to appeal to health-conscious consumers.

Using sugarcane separating technology developed by Resis Australia, DPI&F is involved in designing a process that removes woody sugarcane rind and leaves behind only high-quality cane pith containing antioxidants and fibre usually lost during the white sugar manufacturing process. DPI&F has worked with Horizon Science to develop ways to preserve some of these health-promoting compounds, and large-scale trials are being conducted by several international sugar mills interested in developing new, healthy sugar products.

A study of the physical and biological properties of sugarcane fibre with Japanese–Australian company KFSU Pty Ltd is also underway to examine how health benefits can be incorporated into consumer foods. DPI&F scientists are now planning research to test the human health benefits of these types of sugar products. Once fully developed, the healthy and viable sugar by-products will:

- have an economic value many times that of refined cane sugar, resulting in increased returns to growers
- encourage new, local small-scale manufacturing operations
- provide consumers with a healthy and natural alternative to synthetic sugar substitutes.

## Antioxidant plums a real gem

An exciting new plum variety developed by DPI&F boasts around five times the antioxidants currently found in other varieties. ‘Queen Garnet’, a superior clone from a Japanese plum-breeding program at our Applethorpe Research Station, was named in 2006, commercialised in 2007 and now has provisional plant breeder’s rights protection in Australia. The plums were first marketed fresh in Australia in February 2008, but are suitable for both fresh market and processing industries.

Scientists have found that one glass of ‘Queen Garnet’ plum juice has the same antioxidant value as 13 glasses of orange juice or six cups of tea. Studies also suggest the antioxidant found in dark fruit (anthocyanin) can help prevent many human diseases, including some cancers. A single fruit weighing 100 grams contains the equivalent of the daily average intake of anthocyanin.

‘Queen Garnet’ plums are currently in store from early February each year for around four weeks. Future initiatives may include marketing a ‘Queen Garnet’ health juice and investigating further processing opportunities to make the fruit available year round.



## Future directions

### Future trade

In 2008–09, DPI&F will build on its trade development success by:

- embarking on the 'Global Markets' initiative to improve market access and help exporters pursue opportunities in target markets, including Europe and Asia, working in partnership with Queensland's food industry
- working with Austrade and Trade Queensland to link local services and suppliers with visiting buyers from across the globe at the Handshakes business matching program as part of 2009 Beef Australia in Rockhampton
- further pursuing opportunities in the Middle East and Korea to capitalise on previous successes for food and ingredient exporters.



**DPI&F will build on its trade development success working with Austrade and Trade Queensland as part of 2009 Beef Australia.**

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