



**Australian Government**

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**Rural Industries Research and  
Development Corporation**

# **R&D Plan for Asian Foods 2005-2010**

January 2005

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# Foreword

Within the context of our five year Corporate Plan we have committed ourselves to the development of R&D plans for each of the major RIRDC Sub-programs.

This is the second plan for RIRDC's Asian Foods Program. The publication has been prepared with the assistance of AgEconPlus Pty Ltd and is based on close consultation with industry, research and marketing stakeholders.

The plan is for all stakeholders in the industry. It will be distributed widely by the Corporation and used by RIRDC to guide future R&D investments in the Asian Foods Sub-program. The plan will be implemented in accordance with the provisions of the *Primary Industries and Energy Research and Development Act 1989*.

Most of RIRDC's publications are available for viewing, downloading or purchasing online through our website:

- downloads at [www.rirdc.gov.au/fullreports/index.html](http://www.rirdc.gov.au/fullreports/index.html)
- purchases at [www.rirdc.gov.au/eshop](http://www.rirdc.gov.au/eshop)

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# Abbreviations

IP	Intellectual property
IRR	Internal rates of return
GAP	Good agricultural practice
HACCP	Hazard analysis and critical control point
HAL	Horticulture Australia Limited
NESB	Non English speaking background
QA	Quality assurance
RDCs	Research & Development Corporations

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# 1. Purpose of the Plan

The purpose of this plan is to guide RIRDC's investment in its Asian Foods R&D Program over the five years to 2010. The plan sets out the objectives of the R&D, strategies to achieve these objectives and performance indicators.

The strategies set out broad R&D activities that deliver the objectives. They provide a guide for research proposals to the program. Proposals for other activities will need to make a strong case for consideration by the R&D advisory panel.

Performance indicators are selected to assist in monitoring the success of the projects and ensuring the program is on track. The plan will be reviewed informally each year to ensure that the objectives and strategies are still the most appropriate for achieving the vision for the Asian food industry.

## **2. The Vision and the Mission**

The plan vision is:

A prosperous competitive Asian food industry in Australia, exporting to Asian markets and replacing imports in the Australian market.

The mission is:

To provide an R&D program that supports industry in its drive to develop new products and markets and to gain competitive advantage through improving productivity in, and achieving price premiums for, Australian production.

# 3. Industry Background

## Defining Asian Foods

The Asian foods industry in Australia covers two main areas:

- Asian vegetables
  - Fresh: leafy vegetables, root crops and a range of other vegetables such as bamboo shoots, Japanese ginger and wasabi;
  - Simply processed: fresh cut mixes, pickled, dried or otherwise preserved product;
- Processed Asian food products
  - Food products traditionally sold in Asian markets (including Asian consumers in Australia); and
  - Food products with an 'Asian' taste targeting broader markets (including pickles, sauces and fermented soy products).

Processed food may be made from traditional Australian commodities, which may be combined with traditional Asian ingredients, or made predominantly from Asian ingredients.

## Classifying Asian Vegetable Growers

It is helpful to the consideration of this plan to classify Asian vegetable growers into two groups. Group 1 growers tend to operate small-scale market gardens within the metropolitan area of capital cities. Group 2 growers tend to operate larger commercial holdings in the regions. Key features of both groups are summarised in the next table.

## Asian Vegetable Industry Profile – An Industry with Two Types of Grower

Group 1 – Market Gardeners	Group 2 – Scale Producers
Recent migrants	Second generation Australians
Small scale market gardens (1/4 to 5 ha)	Larger commercial operations (5 to 50 ha)
Small volume production and a large number of different vegetable types	Fewer high volume products such as Chinese cabbage
Some seed saved for next year's crop	Commercial seed including hybrid seed
Supply fresh produce, especially leafy bunch lines to the domestic market	Producers of boxed product that requires less labour. More likely to be involved in exporting
Traditional practice	Best practice
Members of ethnic based growers groups	Members of broadly based grower groups. Grow Asian and conventional vegetables
Difficulty with communication	Actively seek information
More likely to experience cool chain breakdown. Poor profitability hampers capacity to invest in refrigeration	Use of specialty refrigerated storage and transport, new packing cases, adherence to cool chain management and QA
Market to restaurants and smaller scale greengrocers	Market to larger scale retail (Western and Asian) and exports
More likely to bypass the central market system. Make use of aggregators	Market through central market system and some have sufficient volume to market direct to retailers

Source: Hassall & Associates 2003

## Future Industry Directions

The Australian Asian vegetable industry is a dynamic, growing horticultural sector whose products appeal to Australian consumers. Australian Asian vegetable production value and grower numbers more than doubled in the period 1994 to 2001. Asian vegetables have also doubled their share of total Australian horticultural production (Hassall & Associates 2003).

Growth in processed Asian food products has been less spectacular. The manufacture of value added food products in Australia is disadvantaged by high labour costs relative to productivity, the lack of brand name appeal and shortcomings in marketing expertise (CIE 2000).

Since inception of the RIRDC Asian Foods Sub-program in 1993 the Asian vegetable industry has become more sophisticated and organised. This trend is particularly apparent amongst Group 2 growers. Key trends and innovations include:

- Improved chemical management, agronomy, superior hybrid seeds and yields;
- Larger farms in more remote locations;
- Adoption of QA/HACCP where this is required;

- Linkages between grower groups, government and research;
- More sophisticated supply chains and cold chain management;
- Emergence of medium and large growers that seek to manage the supply of a particular product line;
- Alternative market outlets and wider product availability;
- New crops; and
- Consolidation of production lines.

Given the importance of supermarkets to Australian fresh produce retailing, the following points are offered to provide insight into future market directions:

- The major supermarket chains are pleased with Asian vegetables as a category. The category has provided strong growth and is profitable.
- However after an initial period of experimentation, supermarkets are contracting their offering around more popular/high turnover lines.
- Problems with Asian vegetables include inconsistency of supply and price, variable product quality, poor or even 'off flavours' and packed product that is underweight by the time it reaches consumers.
- The supermarket retailing environment is becoming more competitive. R&D will be required to lower vegetable production costs and ensure the category remains competitive.
- Attributes such as flavour, freshness and crispness will set the agenda for new product lines. An excellent visual appearance is taken for granted.
- Future emphasis will also include improvements in product quality, cleanliness, packaging, shelf life, bio-terrorism prevention and tamper-proof packaging and consistent terminology/nomenclature.
- Consumers of Asian vegetables fall into two categories – traditional Asian consumers who purchase on the basis of freshness, price and quality and Western consumers who often have little idea of how to use the product. Strategies are required to target this latter group.
- The health benefits of Asian vegetable consumption need to be demonstrated. Asian vegetable consumption is increasing but more needs to be done to appeal to Western customers and product branding would assist.
- A precondition of supermarket supply will be HACCP certification.

With consistent nomenclature, dietary and functional food quality research and product promotion, Asian vegetables have the capacity to be recognised by the Australian population as a major fresh produce retail category.

In particular, the future lies with group 2 commercial producers. The near mainstream lines they produce, will merge into the mainstream and lose their status as exotics. Group 2 growers will continue to adopt best practice production and supply chain delivery systems.

Group 1 producers will occupy relatively limited niches from which new mainstream products will sporadically emerge. Group 1 growers will face pressure to close their operations as their market gardens are affected by urban expansion. This will trigger investment in either group 2 style operations or fund entry into another sector.

Group 2 growers will organise by vegetable type or production method rather than along production lines. Single growers will seek to dominate a category and protected crop production systems will be increasingly important.

Supermarkets will continue to set the domestic market agenda and their increasingly stringent requirements will be met by group 2 growers. Group 1 growers will need to seek out niches with Asian grocers, farmer markets, and potentially, the food service sector and restaurants.

Exporting of fresh Asian vegetables will continue to be very competitive and best returns will be achieved by a whole chain approach for boutique products that bypasses Asian central markets.

# 4. Key Challenges for the Industry

An industry strengths, weaknesses, opportunities and threats (SWOT) analysis, informed by a background paper on the program (AgEconPlus 2004) and an industry workshop is presented below. Emphasis has been placed on those elements that can be addressed through R&D.

## Asian Foods Strengths Weaknesses Opportunities and Threats Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Strong domestic demand for Asian vegetables</li> <li>▪ Suitable natural resources</li> <li>▪ Overseas and domestic perception of a clean production base</li> <li>▪ Seasonal supply advantages – northern hemisphere and latitudinal growing season</li> <li>▪ Continued emergence of new products/varieties</li> <li>▪ Asian vegetables are beneficial to human health</li> <li>▪ Research infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Majority of growers do not understand production and market requirements</li> <li>▪ Non-compliance with quality requirements by many Group 1 growers</li> <li>▪ Consumers unsure how to use more exotic vegetables</li> <li>▪ Lack of research data on functional and beneficial (health) qualities of Asian vegetables</li> <li>▪ High labour costs relative to export competitors</li> <li>▪ High priced land/water and no scale economies for Group 1 growers</li> <li>▪ Small domestic market limits opportunities for processed foods</li> <li>▪ Lack of market research and market data</li> <li>▪ Plateau in demand through some outlets with resultant downward pressure on price</li> <li>▪ Lack of standardised nomenclature</li> <li>▪ High costs associated with packaging and transport</li> <li>▪ Lack of ‘through chain’ approach to marketing</li> <li>▪ Expensive/inappropriate packaging</li> </ul>

<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>▪ Clean exports to Asia (Japan and Singapore concerned by chemical residues in Chinese product and biosecurity (Avian flu) issues)</li> <li>▪ Products for growing food services sector (both fresh and semi processed)</li> <li>▪ Target opinion leading chefs/restaurateurs with new products to grow domestic demand</li> <li>▪ Farmer markets</li> <li>▪ Semi processed convenience foods</li> <li>▪ Mechanisation of production</li> <li>▪ Benefits can be achieved through grower collaboration</li> <li>▪ Recognise the existence of different groups of growers with different skills and adjust R&amp;D to their particular needs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Competition from China in export markets (also Vietnam, Malaysia and New Zealand)</li> <li>▪ Rationalisation of domestic supply chains and potential exclusion of some growers</li> <li>▪ Poor chemical management damaging industry reputation</li> <li>▪ Declining traditional vegetable consumption in Asia</li> </ul>

# 5. Research Directions

The Asian Foods Sub-program originated with a National Workshop in July 1993 that set initial R&D priorities. In 1999, in accordance with RIRDC practice, a five-year R&D plan was developed for the Sub-program following an evaluation of progress to date and a workshop of researchers, marketers, growers and government stakeholders (CIE 2000). A similar plan preparation process has also been used in 2004 to review the 1999 five-year plan and prepare a new R&D strategy.

## Research Outcomes

The RIRDC Asian Foods Sub-program 1999 to 2004 included some 38 projects across six R&D plan objectives. The six plan objectives were:

- Industry development;
- New products;
- Production systems and plant physiology;
- Chemical use;
- Shelf life; and
- Cool chain management.

Key achievements for the industry development objective include:

- The publication of an Asian Foods Newsletter, an Asian Vegetables Situation Assessment and two projects involving Vietnamese-speaking liaison officers.
- The establishment of active new industry networks for taro NSW, taro Queensland, bamboo NSW/Qld, industry researchers Australia wide, growers NT and grower group strengthening in NSW.
- Sales of more than 750 publications, an increase in the circulation of the Asian Foods Newsletter (from 700 copies in 1999 to 900 copies in 2004), and the availability of 37 full Asian Foods project reports for download off the RIRDC website.
- An increase in industry value from \$50.4 million (1993/94) to \$135.8 million (2000/01) with a corresponding increase in grower numbers from 679 to 1,675.

The Asian Foods Sub-program has also invested in fifteen new product projects. Review of these projects indicates that a clear understanding of commercial partner requirements and market needs are a precondition of new product success. Key outcomes include:

- The identification of eight new products with high prospectivity including taro, bamboo shoots, lotus, Chinese water chestnut, Prunus mume, edamame, wasabi and bitter melon. Bitter melon has already become a major crop in the NT.
- The establishment of criteria for prospective new crops including the existence of a viable market, evidence that the crop can be grown and the prospect of establishing a supply chain.

- The availability of production protocols for seven value added products including taro, bamboo shoots, lotus, Chinese water chestnut, wasabi, chilli and tempeh.

The production system and plant physiology objective has resulted in new production information across a range of products and regions including taro, bamboo, lotus, Prunus mume, edamame, wasabi, bitter melon, daikon, kabocha and Chinese broccoli.

The Sub-program's chemical use objective sought to ensure chemical use is safe for both workers and consumers. Two projects are currently addressing this issue.

Two projects were also completed in the Sub-program's shelf-life objective, addressing shelf life in minimally processed leafy Asian vegetables and modified atmosphere packaging. No projects were completed in cool chain management, which is now seen to be an extension rather than a research issue.

## **Future Research Directions**

The Asian Foods Program has invested in initial market research, identified a range of potential new products, expanded knowledge on production and post harvest practices for a range of products and contributed to industry development.

The industry has grown relatively rapidly over the last decade and reached a new level of maturity. However, the SWOT analysis on pages 7–8 indicates that it still faces problems that well targeted research could help to solve. There is still a lack of knowledge amongst consumers about Asian vegetables, there are still difficulties for retailers in securing reliable supplies of produce that meet their quality requirements and export performance could be improved.

The research priorities in this plan aim to address these problems by putting a new emphasis on understanding consumer requirements and development and effective communication of knowledge that will improve the performance of growers and others in the value chain. Research into new Asian food products will continue but will receive a lower proportion of the program's investment than in the past.

## **Commercialising IP**

RIRDC will manage research outputs in such a way as to maximise the benefit to its stakeholders. In some cases this will be achieved through commercialisation of research results. Commercialisation will be implemented when it provides faster, more sustainable or more practical avenues for making new products, processes and services available to RIRDC's primary stakeholders.

Wherever appropriate, RIRDC will give preference to projects that have industry partners as co-investors, since this is seen as a means of ensuring a vested interest in developing a new crop or technology.

## **Working with Horticulture Australia Ltd (HAL)**

RIRDC and HAL (formerly the Horticultural Research and Development Corporation) will continue to collaborate on Asian foods research. This collaboration will take the following forms:

- Joint funding of RIRDC projects where they meet HAL priorities;
- A contribution of RIRDC funds to HAL projects where there is scope to broaden the project's focus to cover RIRDC products and priorities.

HAL will continue to be represented on RIRDC's Asian Foods Program Advisory Panel.

## 6. The Research and Development Program

The following strategies were developed at an R&D planning workshop, held in September 2004, involving industry stakeholders including growers, retailers, marketers, researchers and the RIRDC Sub-program manager. The strategies form a coherent program to meet the broad objectives of providing R&D to support and encourage the development of the Asian food industry in Australia. The plan is more tightly focussed than the previous plan, reflecting the increase in industry knowledge and the wealth of research already completed. Plan strategies should guide the proposals made to RIRDC for R&D funding. The background paper (AgEconPlus 2004) sets out the history of the program, program performance and an industry situation assessment. It is important for proponents to consider this material and how their proposal fits into the program structure. RIRDC will also commission projects to fill gaps that are key to the overall plan.

There are four Sub-program objectives. The objectives, along with an indicative R&D budget allocation, are:

- Objective 1:            Understanding **consumer needs** in both domestic and export markets (30%)
- Objective 2:            **Communication** and collaboration with industry (25%)
- Objective 3:            Improve **crop productivity, sustainability and produce quality** (30%)
- Objective 4:            Foster development of **new products**, both fresh and semi processed (15%)

A brief description, strategies and performance indicators to address each of these objectives is detailed below.

**Objective 1:            Understanding consumer needs in both domestic and export markets**

Description:

Asian foods enjoy strong domestic demand, a reputation for being a healthy meal ingredient and a certain amount of excitement as 'new' products. However, fashions change rapidly and consumers are often unsure of what to do with the more exotic vegetable lines. This objective is about understanding consumer needs and capturing additional value in both the domestic market and export markets where there is the potential to identify opportunities for high value niche products.

Strategies:

- Expand the domestic market through improved understanding of consumer shopping trends and requirements (consumer research)
- Use consumer research findings to design Asian vegetable promotion strategies for uptake by commercial interests (point of sale material and material to target opinion leading restaurateurs/food writers)
- Establish in association with retailers a consistent Asian vegetable nomenclature
- Improve market efficiency and transparency through the provision of timely Asian vegetable market data and development of grower production/marketing strategies
- Investigate the Asian vegetable needs of alternative market channels including the food service sector, Asian grocers, farmer markets and so on
- Develop a better understanding of supermarket requirements for stocking 'mainstream' and new Asian vegetables
- Identify and evaluate high value niche export markets where Australia can effectively compete with low cost Chinese and other Asian vegetable exports (counter seasonal, organics, etc)
- Improve grower understanding of supply chain needs for both domestic and export markets

Performance Indicators:

- Consumer research data capable of driving grower production decisions
- Promotional material prototypes suitable for use by commercial interests
- Timely market data for major markets and crops
- Availability of knowledge on requirements of domestic and export retail outlets
- Number of new markets served by Australian production
- Increase in volume into existing markets

## **Objective 2:           Communication and collaboration with industry**

### Description:

This objective is about ensuring uptake of the research message through improved communication. This area has been addressed through the previous R&D Plan including through the Asian Foods Newsletter, NESB Communication Officer projects and researcher group meetings. Continued investment of this type is proposed with an emphasis on cost effective group based learning and the communication/uptake of existing research findings.

### Strategies:

- Identify industry preferences for communication (video, newsletter, demonstration farms, case studies/RIRDC champions, etc)
- Examine the potential of commercial agricultural suppliers to assist in the communication of extension messages
- Review existing Asian Food and other research to distil and communicate key messages (instigate a Sub-program 'Harvest Year')
- Channel Harvest Year information through Horticultural Industry Development Officers, Communication Officers and the supply network
- Prepare and disseminate best practice, Good Agricultural Practice (GAP), and supply chain management advice for major Asian vegetables
- Examine the potential of productivity/mentoring groups such as those used in Virginia South Australia for cost effective communication of research findings
- Structural adjustment - ensure appropriate information is available to Group 1 growers (languages and format) to ease the impact of industry adjustment
- Broaden content and appeal of "Access to Asian Foods" Newsletter by incorporating past Asian Foods Program, HAL and international research findings as well as a broadening of emphasis away from production and towards more information on market intelligence, consumption trends and so on
- Continue annual researcher group meetings and explore opportunities to engage with growers and other parts of the supply chain during these forums

### Performance Indicators:

- Number of active grower groups
- Access to publications (eg reports on web) and circulation of the "Access to Asian Foods" Newsletter
- Evidence that growers and others in the value chain are changing their practices in response to available knowledge
- Five annual researcher group meetings with good grower attendance

**Objective 3:            Improve crop productivity, sustainability and produce quality**

Description:

This objective addresses current and emerging production, distribution and quality issues that impact on the viability of Asian vegetables. It is concerned with solving problems that have a bearing on the cost, efficiency, environmental sustainability and market acceptability of Asian vegetables. Projects will address agronomy, plant physiology, disease management, harvesting efficiency, chemical management, supply chain efficiency and so on. Researchers funded from this area will need to demonstrate the economic return to producers from the proposed investment.

Strategies:

- Develop information to improve the quality of produce – specifically targeting growers in greatest need.
- Research mechanisation to ease the high cost of farm labour including adaptation of existing technology, support agronomy, partnerships with HAL and machinery manufacturers
- Develop approaches to facilitate the movement of growers from Group 1 to Group 2
- Identify and disseminate information on the compounds in Asian vegetables that promote human health
- Develop technical codes of practice (eg store at X temperature, Y days) for each link in the supply chain to ensure consumer and retailer needs are met
- Explore the potential of protected cropping systems to deliver Asian vegetable product consistency and quality on a profitable basis
- Cooperate with other RDCs to facilitate cost effective chemical use approvals
- Investigate and extend training programs and materials to ensure growers are able to meet legislative and OH&S requirements and obligations in the use of chemical products
- Investigate biological controls for clean and cost effective production
- Increase the understanding of the Asian foods value chain and target links where profit is lost. (Use value chain analysis as a diagnostic tool)
- Shelf life - examine opportunities to increase the effective shelf life of Asian vegetables including packaging and ethylene separation

Performance Indicators:

- Supermarket survey results indicating an improvement in reliability of supplies and produce quality
- Commercial adoption of mechanisation research
- Information available on Asian vegetable health benefits
- Number of technical codes of practice available for adoption
- Increase in the number of available production chemicals

**Objective 4: Foster development of new products, both fresh and semi processed**

Description:

This objective is about setting aside resources for the high-risk activities that are unlikely to be funded by the private sector alone. Nevertheless proposals for research investment under this objective should involve industry partners and, where appropriate, should provide a business plan for the development of the new product.

Strategies:

- Rebirth old products that have lost market appeal (eg organic Chinese cabbage)
- Explore organic Asian vegetable products for export markets. Strategy to be pursued in conjunction with RIRDC's Organics program
- Investigate seaweed, aquaculture, sea cucumber and eels (in conjunction with the Fisheries Research and Development Corporation)
- Further work on specialty mushrooms
- Examine the links between Asian foods and Chinese medicine for potential for new medi-pharmaceutical remedies and products
- Examine opportunities to value add through semi processing (eg bitter melon juice)

Performance Indicators:

- Number of new products with high prospectivity identified
- Availability of production protocols for value added products

# 7. References

AgEconPlus (2004) Asian Foods Sub-program Review. A Report Prepared for the Rural Industries Research and Development Corporation

CIE (2000) Asian Foods Program Background Paper, A report for the Rural Industries Research and Development Corporation.

Hassall & Associates (2003) Asian Vegetable Industry, A Situation Assessment. A Report Prepared for the Rural Industries Research and Development Corporation

RIRDC (2000) R&D Plan for the Asian Foods Program 2000-2004

# 8. Appendix

## Attachment 1

### Alignment of Program Strategies with RIRDC's Corporate Goals and Strategies

RIRDC GOAL	Specific RIRDC Strategy	Asian Foods Program Strategies
<b>GOAL 1</b> Develop new opportunities	Establish suitable market research studies to assess market viability for potential new industries to establish a demand based research agenda	Understanding consumer needs in both domestic and export markets (Objective 1)
	Address potential non-traditional uses for agricultural products with closer multi-sectoral linkages, including food, feed, pharmaceutical and energy	Understanding consumer needs in both domestic and export markets (Objective 1)
	Identify and research new knowledge based and value added products, services and industries based on agriculture	Foster development of new products both fresh and semi-processed (Objective 4)
<b>GOAL 2</b> <i>Adopt new technologies and systems for established industries</i>	Deliver R&D packages that are amenable for adoption by industry and key stakeholders	Communication and collaboration with industry (Objective 2)
	Disseminate R&D results through effective demonstration and communication systems and channels	Communication and collaboration with industry (Objective 2)
	Provide research information and incentive systems (including commercialization strategies) to facilitate more effective resource use by existing industries	Improve crop productivity, sustainability and produce quality (Objective 3)
<b>GOAL 3</b> <i>Improve the competitiveness</i>	Develop and promote alternative cropping and animal husbandry systems	Improve crop productivity, sustainability and produce quality (Objective 3)

<i>and sustainability of Australian agriculture</i>	which avoid or reduce negative environmental impacts in the rural sector	
	Increase the focus on consumer and customer demand for clean, green, safe and healthy products and food integrity	Understanding consumer needs in both domestic and export markets (Objective 1)
	Augment market access systems through measures to improve scientific analysis and controls over invasive pests and diseases	Understanding consumer needs in both domestic and export markets (Objective 1)
<b>GOAL 4</b> <i>Underpin innovation and change in Australian Agriculture</i>	Promote improved farm health and safety performance	Improve crop productivity sustainability and produce quality (Objective 3)
	Contribute to the development of the next generation of rural industry leaders	Communication and collaboration with industry (Objective 2)

## Attachment 2

### Alignment of Asian Foods Program Strategies with National Priorities and Rural Research Priorities

National Priorities	Asian Foods Program Strategies
An environmentally sustainable Australia	Improve crop productivity, sustainability and produce quality (Objective 3)
Promoting and maintaining good health	Improve crop productivity, sustainability and produce quality (Objective 3)
Frontier technologies for building and transforming Australian industries	Understanding consumer needs in both domestic and export markets (Objective 1), Foster development of new products both fresh and semi-processed (Objective 4)
Safeguarding Australia	Improve crop productivity, sustainability and produce quality (Objective 3)

National Rural Research Priorities	Asian Foods Program Strategies
Sustainable natural resource management	Improve crop productivity, sustainability and produce quality (Objective 3)
Improving competitiveness through a whole of industry approach	Communication and collaboration with industry (Objective 2), Improve crop productivity, sustainability and produce quality (Objective 3)
Maintaining and improving confidence in the integrity of Australian agricultural, food, fish and forestry products.	Understanding consumer needs in both domestic and export markets (Objective 1),
Improved trade and market access	Understanding consumer needs in both domestic and export markets (Objective 1),
Use of frontier technologies	Improve crop productivity, sustainability and produce quality (Objective 3), Foster development of new products both fresh and semi-processed (Objective 4)

Protecting Australia from invasive diseases and pests	Improve crop productivity, sustainability and produce quality (Objective 3),
Creating an innovative culture	Communication and collaboration with industry (Objective 2)