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Rural Industries Research and Development Corporation

# Australian Olive Industry RD&E Plan

## 2010–2015

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Australian Government

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# Australian Olive Industry Research, Development and Extension Plan

## 2010–2015

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# Foreword

The renaissance of the Australian olive industry, which began in the mid-nineties triggered a period of rapid growth, which saw the industry expand from a cottage industry entering its 'start-up' phase to what is now an 'emerging' commercial industry with domestic and export retail sales of around an estimated $180m per annum. It is expected to become a 'mature' industry around 2015–20.

This growth has been supported by many RD&E projects covering all olive supply chain activities including cultivar selection, olive grove management, processing, product storage, industry standards, marketing and customer awareness. In the last seven years (to 2009–10) 46 RIRDC RD&E projects with an investment value of $4.71m have been completed or are currently in progress.

This new Five-Year Plan is the third for the Olive Industry and is more comprehensive than previous Plans. The Plan outlines the RD&E outcomes that are required to meet the Industry's vision of being *"a sustainable and unified Australian Olive Industry that produces high quality products for domestic and export markets"*. Importantly, it provides the essential framework with which to manage the allocation of funds to RD&E Projects and provides guidance to research institutions and those with relevant research expertise. It also identifies research expertise required in future years.

RIRDC has been the major contributor of RD&E funds to the olive industry, providing 43 per cent of the cash funding required over the last seven years. Other major contributors have been research organisations at 30 per cent with the balance being provided by industry. In a very competitive global market, increased industry contributions to fund RD&E outcomes will be necessary to keep the local industry ahead of its international competitors.

This report is an addition to RIRDC's diverse range of over 2000 research publications and forms part of our Olives Program which aims to manage investment in research and development by the olive industry and government to build a profitable industry through more efficient production methods; a strong reputation as a supplier of quality products; an expanded domestic and export market opportunities; and a sustainable use of land and water resources.

The Olive program is funded by voluntary industry revenue and RIRDC core funds provided by the Australian Government.

Most of RIRDC's publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

**Craig Burns**
Acting Managing Director
Rural Industries Research and Development Corporation

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# Executive Summary

## WHAT THE REPORT IS ABOUT

This is the third Five-Year Research Development & Extension (RD&E) Plan for the Australian Olive Industry. It is more comprehensive than the previous Plans, detailing its current (early 2010) view of those RD&E outcomes required to meet the industry's vision of being *"a sustainable and unified Australian Olive Industry that produces high quality products for domestic and export markets"*.

Importantly, it provides the essential frame work with which to manage the allocation of funds to RD&E Projects and also guidance to research institutions of research expertise required in future years.

It also reviews the effectiveness of the previous Five-Year Plan.

## WHO IS THE TARGET AUDIENCE?

The Plan is an important tool to enable researchers and research organisations to match the Australian Olive Industry's RD&E requirements with their own research expertise. It enables the Olive Industry Advisory Committee and RIRDC to select those research submissions that best fit the Industry's priorities and budget.

## WHERE ARE THE RELEVANT INDUSTRIES LOCATED IN AUSTRALIA?

Olives are grown throughout most of the temperate South Eastern, South Western and Eastern Seaboard regions of the continent. However, two regions in particular account for over an estimated 70 per cent of Australia's current production i.e. north-central Victoria and north of Perth Western Australia.

Accurate statistics about the number of groves and trees in Australia are unavailable but current industry estimates are of around 10 million trees grown on over 800 groves covering more than 30,000 hectares. It is believed that over 70 per cent of the trees are concentrated in less than 20 groves. Olive oil and table olive production in 2009 was estimated at 15,000 and 3,200 tonnes respectively (Source: Australian Olive Association [AOA]) with an estimated retail value of over $185m.

It is intended that research outcomes arising from this Plan will be of value to all participants in the olive industry supply chain.

## A SNAPSHOT OF THE 2010–2015 RD&E PLAN


The Plan has four Objectives. Each Objective has several Strategies, each of which forms the basis for a research project.

**Objective 1:** To provide information which establishes the benefits of Australian olive products.

**Objective 2:** To maintain the current high quality product while improving productivity, profitability and environmental management through all stages of the supply chain (nursery > grove > processing > storage).

**Objective 3:** To develop strategies for existing and new olive producers to reduce the effects of climate change and variability.

**Objective 4:** To build an educated, collaborative, innovative and skilled industry workforce and a cost effective, well funded RD&E program.

An annual review of the RD&E Program's Strategies and Priorities is proposed to keep them up to date in a commercial environment that is difficult to predict several years hence.

# 1. Purpose of this RD&E Plan

The Australian Olive Industry RD&E Plan 2010–2015 has 6 purposes:

1. It provides the Australian Olive Industry's current (early 2010) view of those RD&E outcomes required to meet its vision of being *"a sustainable and unified Australian Olive Industry that produces high quality products for domestic and export markets"*.

2. It provides a frame work with which to manage the allocation of funds to RD&E Projects by;

    a. Providing the rationale for their listing in the Plan.
    b. Indicating the current and evolving priorities of the RD&E projects
    c. Broadly describing the required RD&E outcomes.

3. It provides researchers and research organisations with insights into the areas of RD&E expertise that may be required in the future.

4. As likely funding constraints will impede the full implementation of all the RD&E outcomes identified in this Plan, it provides an ongoing record of what still needs to be done.

5. It identifies potential areas of international and domestic collaborative research.

6. It provides a review from an industry perspective of the achievements of the previous RD&E Plans.

This Plan is based primarily on the responses by industry participants to the 2009 Australian Olive Industry on-line survey (Appendix 2 p47). The consolidated responses were put to and discussed by the industry participants who attended the 2009 Olive Expo in Canberra and the Industry RD&E Advisory Committee. The final draft Plan was placed on-line for industry comment, as well as being circulated to the Industry RD&E Advisory Committee and AOA Board, prior to its official release.

# 2. The Australian Olive Industry

## INTRODUCTION

The renaissance of the Australian olive industry is entering its second decade. During the last 10 years the Australian industry has grown solidly from a cottage industry to a technically sophisticated industry that is increasingly export focussed. Over this time, the quality of Australian olive oil has consistently improved, and production efficiencies increased, to the point where high quality and affordable Australian extra virgin olive oil is now widely accessible to consumers both in Australia and internationally. The growth in the table olive sector has been slower, yet there is significant scope for further growth in expanding domestic and international markets.

Significant growth always presents additional challenges. Waste from oil and table olive production needs to be appropriately managed, or even better, utilised for both economic and environmental gain. Inputs also need to be used with greater economy. In particular, the efficient use of scarce and increasingly expensive water resources will always be a high priority for the Australian olive industry. Effective strategies that could be used to inspire domestic and international consumers to further switch from European to the Australian product also need to be investigated in order to grow demand.

## EXTRA VIRGIN OLIVE OIL

Extra virgin olive oil is the oil that has been extracted from the sound fruit of *Olea europaea* using a mechanical process and without the use of chemicals or excessive heat. It is an important flavoursome ingredient of most Mediterranean cuisines. Extra virgin olive oil is also considered by many to be the healthiest edible fat, presumably due to its favourable natural chemistry including an abundance of monounsaturated fat, phytosterols and anti-oxidants such as polyphenols and tocopherol.

It is estimated that over 95 per cent of olive oil produced in Australia is of the extra virgin grade (Miller pers comm.). On the other hand, a significantly greater proportion of European olive oil production is refined and sold under the commercial grades of ‘light’, ‘pure’, ‘olive oil’ and ‘pomace olive oil’.

The total production of olive oil in Australia in 2009 was estimated to be around 15,000 tonnes, up from 2,500 tonnes in 2004 (Source AOA). The annual production of olive oil increased on average by 47 per cent over the last 4 years (Figure 2.1). While the 2009 Australian production accounts for around 0.5 per cent of the total world olive oil production of 2.67m tonnes, it is estimated that it accounts for around 1 per cent of the total production of olive oil meeting the extra virgin grade (Miller pers comm.). While Spain, Italy and Greece continue to be the largest producers of olive oil (Figure 2.2), their production volumes have scarcely increased over the last decade. In the same period, North African production increased by 50 per cent (Figure 2.3) and New World production quadrupled, prompted primarily by gains in Australian and Argentine production. However, New World production comprises a very small proportion of the worldwide total.

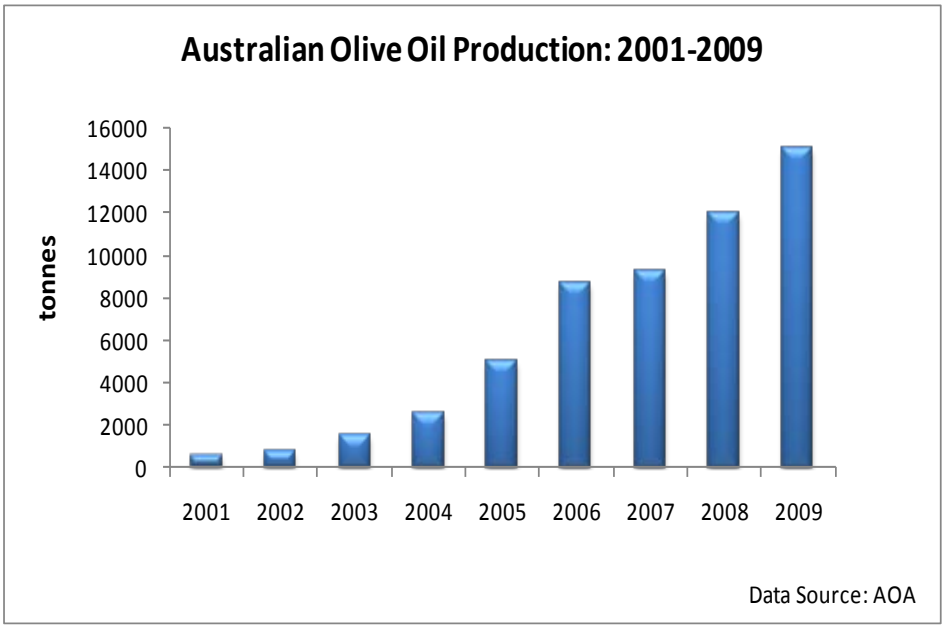



Figure 2.1 Australian olive oil production 2001–2009

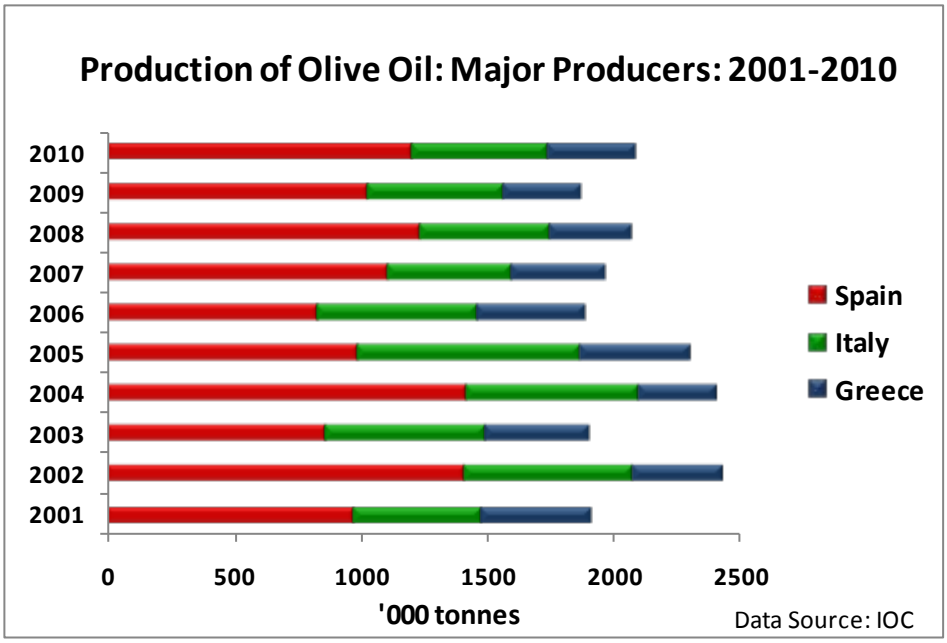



Figure 2.2 Production of olive oil: major producers: 2001–2010

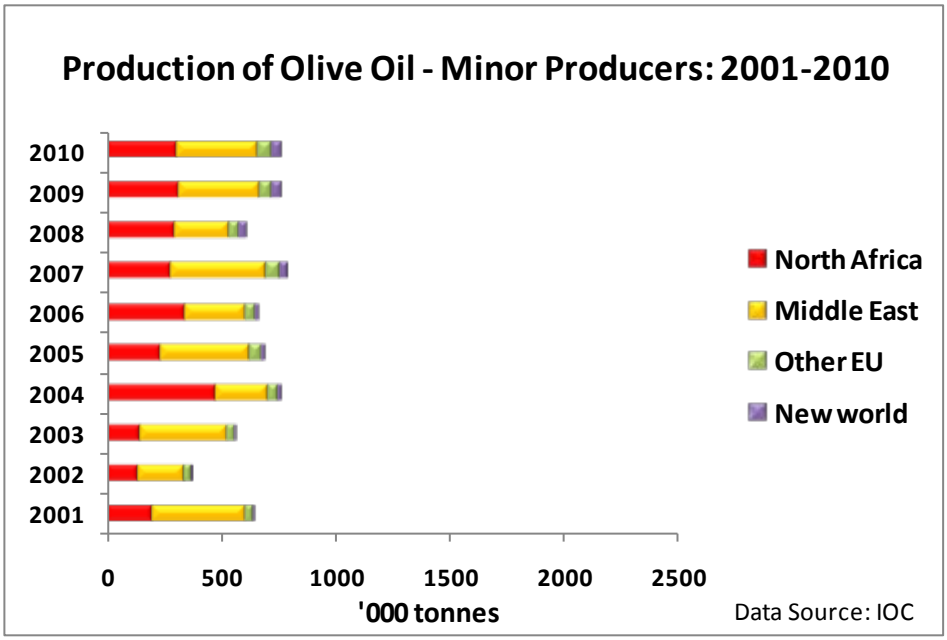



Figure 2.3 Production of olive oil: minor producers: 2001–2010

A survey of nursery sales and orders conducted in 2002 resulted in an estimate of the potential plantings at around 8.5 million trees (Sweeney, S. 2002). The survey was taken at a time of significant industry expansion and the estimated tree numbers probably account for the majority of trees currently in production. The AOA estimates current tree numbers are in the order of 9 to 10 million which represents an area of 30,000 to 33,300 ha (based on an average tree planting density of 300 trees/ha).

## PRODUCT QUALITY

The quality of Australian extra virgin olive oil has improved over the last decade. Free fatty acidity (FFA) of olive oil is a general indicator of how sound the olive fruit was at harvest and how carefully it was processed into oil. A summary of the FFA's (Figures 2.4 and 2.5) of olive oils submitted to the Australian National Extra Virgin Olive Oil Competition since 1997 shows an increase in the number of olive oils with acidities under 0.2 per cent. The average FFA of oils exhibited in the 2009 Show was 0.18 per cent which is significantly lower than the internationally recognised level for extra virgin olive oil of 0.8 per cent and compares favourably with the 0.16 per cent reported for small volume Tuscan producers (Anon, 2010)

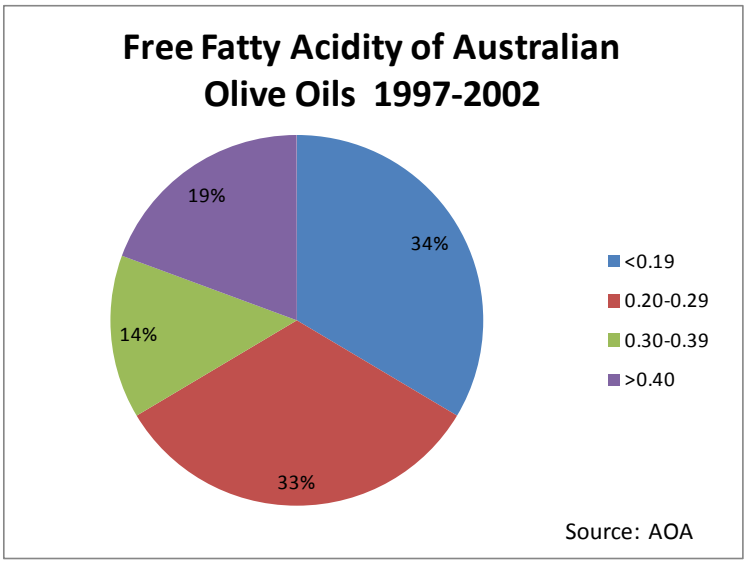



Figure 2.4 Free fatty acidity of Australian olive oils: 1997–2002

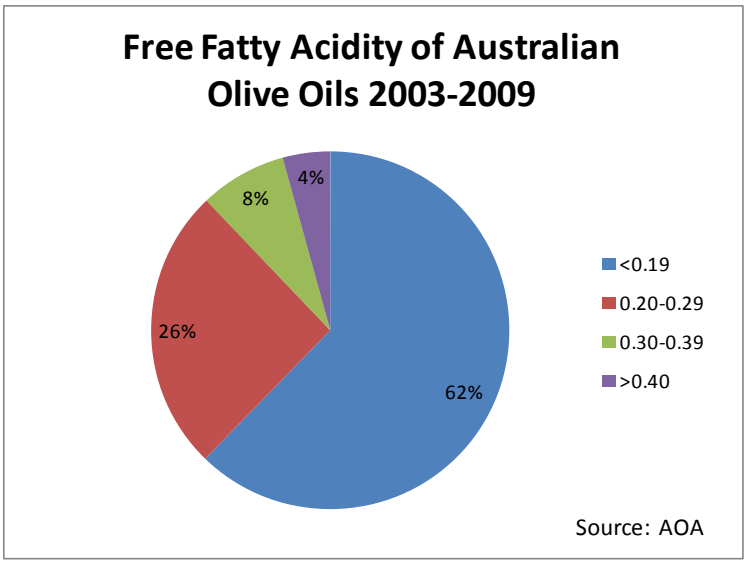



Figure 2.5 Free fatty acidity of Australian olive oils: 2003–2009

## INDUSTRY VALUE

Based on the average price paid for bulk oil over the last 10 years (EU2.55/L ex Jaen Spain) (Source IOC), the value of the 2009 production was $AUD 61M. However, when based on the higher price that is currently being paid domestically for extra virgin olive oil, the 2009 Australian production is valued at around $AUD75M. The retail value of production is difficult to estimate given the number and type of retail outlets where extra virgin olive oil is sold. However, based on the May 2009 average supermarket retail

price of around $11.30/litre, the retail value of Australian extra virgin olive oil produced in 2009 was in excess of $185M.

The volume of exported Australian extra virgin olive oil increased significantly from 501 tonnes in 2004 to 6,959 tonnes in 2009 – an average annual increase of 85 per cent. The value of exports in 2009 was $37.8m (Source ABS). The customers of Australian olive oil (Figure 2.6) have also changed during that time, with the United States and Italy now being the major destinations of Australian olive oils. Exports to China are also increasing albeit from a very low base. This increase in export volume constitutes a major change to where Australian olive oil is sold. In 2004, 20 per cent of Australian production was exported while in 2009 around 46 per cent was destined for the export market.

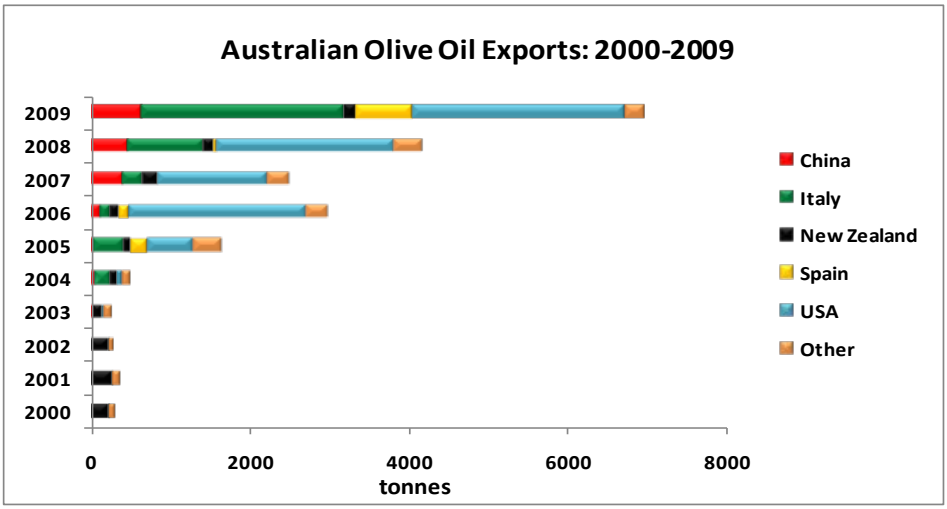



Figure 2.6 Australian olive oil exports: 2000–2009

## IMPORT REPLACEMENT

Attaining a significant level of Import replacement has been a long term objective of the Australian industry. This goal is on track to being achieved (Figure 2.7). The amount of Australian produced olive oil that is consumed domestically now comprises one quarter of the sum total of olive oil that is imported and is produced locally for domestic consumption. The increased percentage of Australian olive oil that is being consumed domestically has occurred in the context of fairly static import volumes over the last 5 years (Figure 2.8). Sheppard (2008) in his survey of Australian consumers showed that those who currently purchase imported olive oil are relatively steadfast in their purchasing habits. Therefore further inroads into increasing the market share of Australian extra virgin olive oil in the domestic market will probably require further investment in consumer education and product promotion.

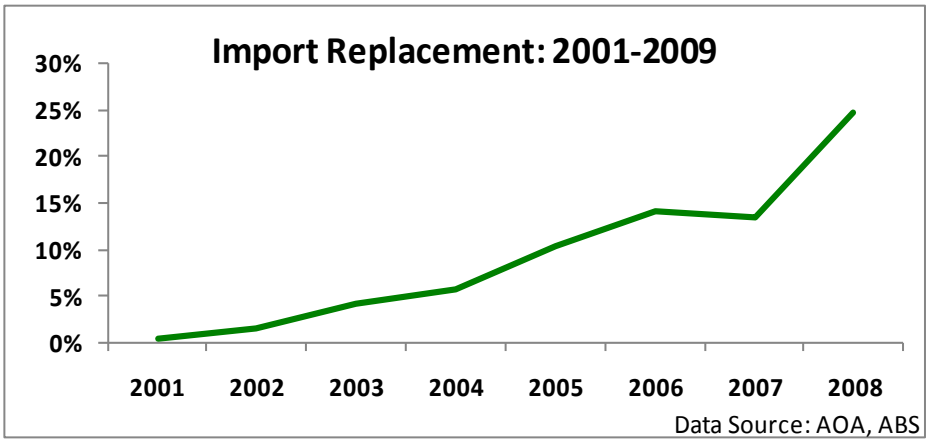



Figure 2.7 Import replacement: 2001–2009

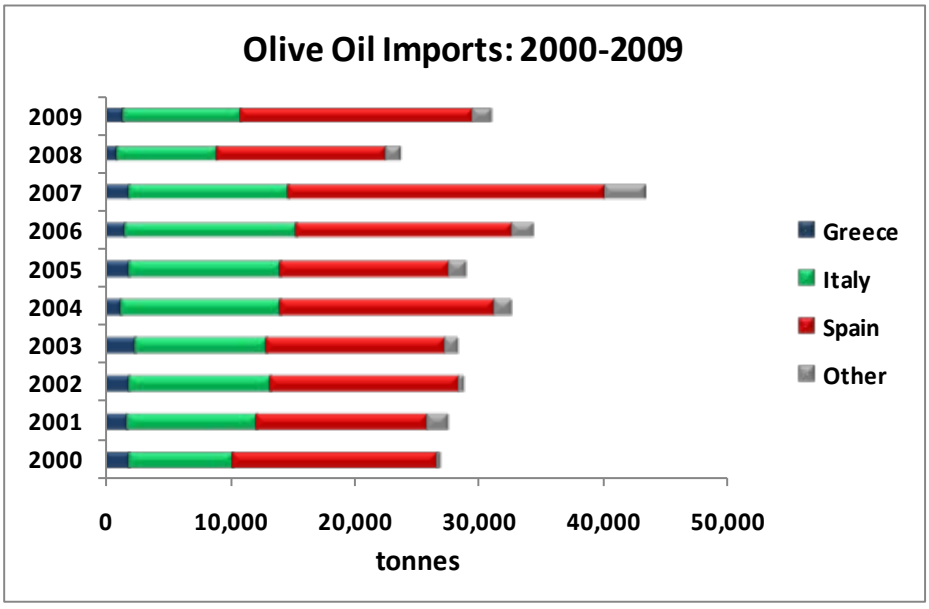



Figure 2.8 Olive oil imports: 2000–2009

## WORLDWIDE OLIVE OIL CONSUMPTION

Worldwide consumption of olive oil has grown very slowly from 2.59m tonnes in 2000 to 2.84m tonnes in 2010 (Source: IOC). The per capita consumption of olive oil in the major olive oil producing and consuming nations has declined over the last decade particularly in Greece where consumption has fallen by over 5 litres per head (Figure 2.9). However this decline has been partially offset by increases in consumption by the

USA, UK, Germany and Australia (combined per capita increase of 27 per cent), but also by France, Portugal, Turkey and Morocco (combined per capita consumption increase of 22 per cent). The reason for the decline in consumption by the traditional producing nations is unclear. However it is likely that the increase in consumption of olive oil by Western nations is due to increased awareness o the health benefits of extra virgin olive oil, and to greater access to information regarding how olive oil can be used (Sheppard, S. 2008).

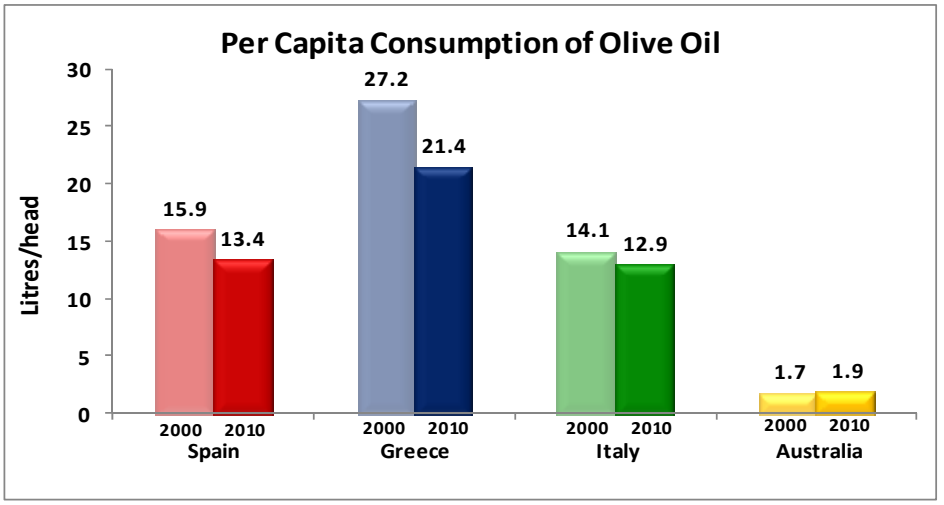



**Figure 2.9 Per capita consumption of olive oil**

## TABLE OLIVES

Olives may also be processed into table fruit. They are produced from olives that are green through black when harvested, and can be treated with alkaline lye, salt dried or soaked in brine.

In 2010, Australian table olive production accounted for only 0.15 per cent of the 1.98 m tonnes produced worldwide (Source: IOC). Australian table olive production over the last 5 years (Figure 2.10) has been variable ranging from 2000 to 3200 tonnes (Source AOA). During that time, imports of table olives have slowly increased (Figure 2.11). It is feasible that the lack of growth in table olive production compared with extra virgin olive oil is the result of prevailing drought conditions combined with the high cost of harvesting olive fruit destined for the table. However the growth of table olive imports during this period suggests that the demand for table olives is increasing. The Australian table olive industry faces challenges in providing a consistent supply of high quality table fruit to the retail sector, particularly in the face of continued lack of irrigation water and labour supply.

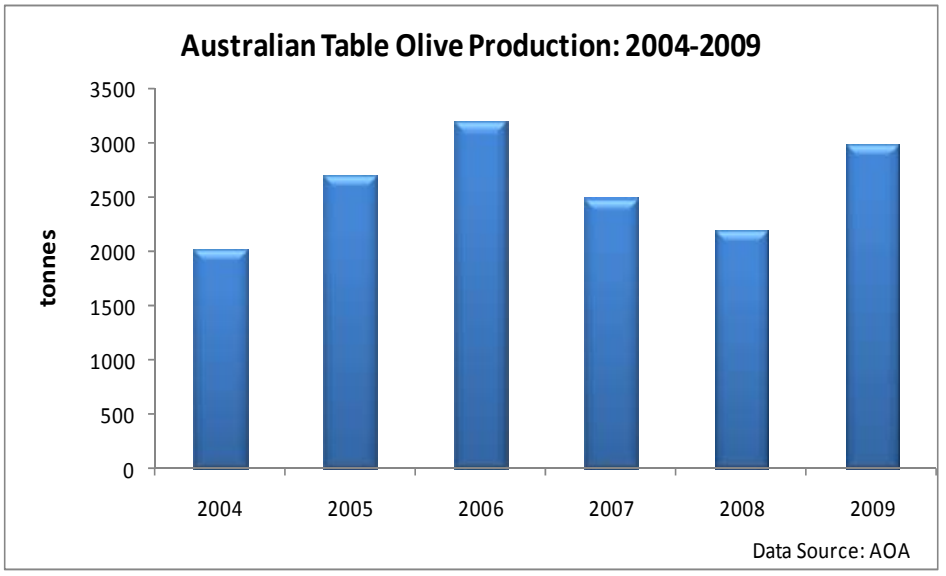



**Figure 2.10 Australian table olive production: 2004–2009**

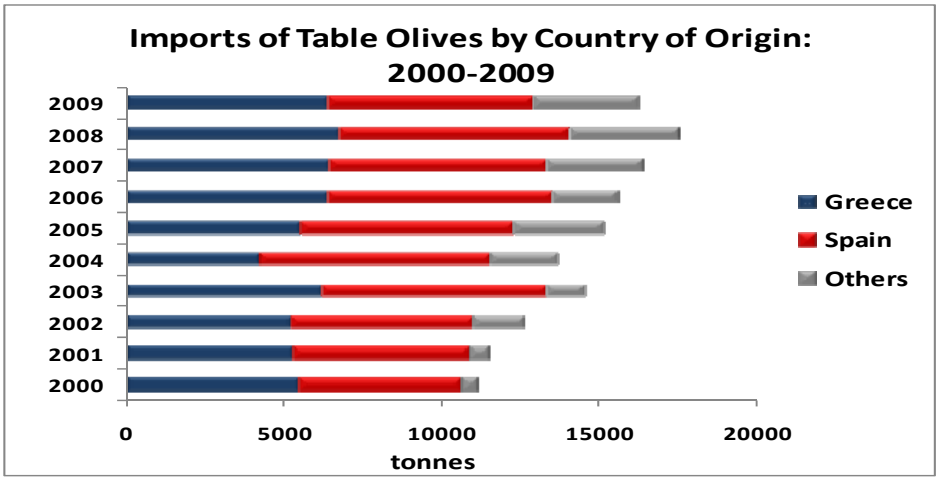



**Figure 2.11 Imports of table olives by country of origin: 2000–2009**

## THE FUTURE OF THE AUSTRALIAN OLIVE INDUSTRY

The previously observed rate of growth is unlikely to continue in the short term. The rate of olive plantings has declined in recent years, and as a result, a significant proportion of future growth will be achieved by recent plantings coming into bearing, and through increased yields due to tree maturity. While olive trees are relatively drought resistant, they still require supplementary water in most regions of Australia if they are to attain commercially viable yields. Uncertain irrigation allocations and high water prices have the potential to affect the profitability of olive enterprises: Australian investment in an olive grove has occurred recently in South America where irrigation supply is more consistent and less costly.

Other external factors will likely impact on the demand and price of Australian extra virgin olive oil. The European Union (EU) has announced changes to its subsidy program, the Common Agricultural Program (CAP). Initially put in place in the early 1960's to protect Italian producers from low cost competition from Northern Africa, the scheme as applied to olives currently subsidises one in four EU farmers to the tune of around 2.3 billion Euros annually (Source: EUROMED). The EU has recently committed itself to removing olive oil export subsidies by 2013 and to reduce import duties on olive oil. Furthermore, the CAP now largely decouples payments from production levels in favour of payment based on production area and the number of trees planted prior to 1998. Furthermore, 40 per cent of subsidy payments are to be set aside for centrally funded projects aimed at furthering the sector in general, rather than financially assisting individual producers directly. While the effect of the changes to the distribution of EU subsidies is difficult to gauge, reduced protectionism should assist in opening up markets for branded Australian products in the EU.

There is also significant growth potential for Australian olive oil in the emerging markets of China and India. Exports to China have increased significantly in the previous two years and India's recent decision to reduce significantly import duties on olive oil from what many would consider previously debilitating 45 per cent to 7.5 per cent, will be helpful in olive oils obtaining a greater share of the edible fat market in that country. However, Australian exporters face increased competition from larger New World producers from Chile, Argentina and the United States who have started to produce high quality extra virgin olive oil from highly mechanised super high density groves

# 3. Key Challenges for the Industry (SWOT)

## SUMMARY COMMENTS

An analysis of the Industry's Strengths, Weaknesses, Opportunities and Threats (SWOT), derived from the responses to four open ended questions in the 2009 Survey, is listed on the next pages. While many of these responses mirrored the 2003 –2008 R&D Plan's SWOT, others reflected a more mature industry with more producers in the 'retail' phase of their operations. Others emphasised the uncertainties caused by the then financial problems of some large Managed Investment Schemes and the high value of the Australian dollar against key overseas currencies.

As would be expected, several SWOT attributes were also reflected in the responses to the questions about future R&D activities.

There is considerable concern amongst the smaller growers about their ability to make a reasonable financial return due to high costs of labour, fertiliser, chemicals and fuel, coupled with the low cost of imported oil which they believe sets an expectation of a low bottle purchase price in the consumer's mind. They are also very concerned about the accuracy of labelling and quality of imported products, and the impact these aspects have on the industry generally. This was coupled with a perception about the lack of any political will to address these matters.

The smaller producers are concerned about the buying power of not only the large supermarket chains but also the larger olive producers who buy oil and their ability to create 'floor' prices for good quality oil that is not sustainable for smaller growers.

Respondents also commented on the lack of consumer understanding of the difference between olive oil types, and also in lack of general knowledge regarding the benefits of using extra virgin olive oil.

Some of the respondents suggest that when they made their investment decision to develop a grove, the available information on potential costs associated with grove and brand establishment has turned out to be inaccurate and as a result may seek government assistance to help them become more established.

Small to medium producers recognised the need;

- for a more cohesive and co-operative industry, particularly at the processing and retailing level.
- to consolidate their processing, brands and marketing if they are to survive.

Despite the challenges above, most respondents expected to have similar or greater areas of olives planted to those they have now, and none of the respondents indicated they were about to leave the industry.

Also, producers are positive about the growth opportunities of the Australian industry, are view the freshness and quality of Australian extra virgin olive oil as some of the industry's great strengths.

The SWOT attributes on the following page are listed in descending order of their frequency of response in the Survey.

## STRENGTHS

- Ability to produce a fresh and consistently high quality product.
- Product grown in a clean and green environment with few traditional olive pests and diseases.
- Not 'hamstrung' by the past practices – have started with leading edge, best-practice.
- Human resource base has a diverse range of skills (although often not horticultural amongst smaller producers),and enthusiastic people with a passion for their product.
- Australia has a good reputation as a trustworthy, innovative and efficient producer of agricultural products.
- New national industry organisation arrangement between AOA, states and regions.
- An established and growing [domestic] market for extra virgin olive oil and olives.

## WEAKNESSES

- High local production costs compared to low cost imported oil threaten the long term viability of smaller groves.
- Industry cohesion is too low – want an international industry not a cottage industry.
- Confusion by consumers regarding naming and types of olive oil and table olives.
- Perceived lack of support for small producers and the political will to assist them.
- Lack of basic horticultural skills and trained people amongst some producers.
- Lack of reliable, regional data on varietal performance, key production and processing benchmarks.
- Ad-hoc funding for industry R&D with no levy across the industry.
- Impact of climate change, reduced availability of water and weather extremes.
- Lack of harvesting and processing infrastructure for small growers.
- Poor communication of R&D results (in a form understandable to most growers).
- Influence of large buyers on oil pricing.
- Lack of reliable, comprehensive statistics – industry participant numbers, production and sales.

## OPPORTUNITIES

- Expand awareness of ‘brand Australia’ as a trustworthy, fresh, healthy, high quality oil.
- Exploit Australia’s relatively clean, green image and freedom from traditional olive pests.
- Access to growing Asian markets.
- Improve grove and processing techniques to reduce inputs and improve production.
- Reduce production costs and increase yields.
- Encourage greater support at a political level, particularly for smaller producers.
- Tap into consumer desire for healthy, local produce.

## THREATS

- Lack of financial sustainability for small to medium producers.
- Competitive reaction to current Australian marketing initiatives by and dominance of large overseas producers.
- Effects of climate change.
- Global and local over production and subsequent price decline.
- Failure to educate consumers about characteristics of olive oils.
- Abandonment of groves leading to pest and disease problems.
- Lack of agreed international standards for olive oil.
- Potential for pest and disease entry into Australia e.g. olive knot.
- No development of effective mechanical harvester for small groves.
- Too many competing, small brands.

# 4. Managing and Funding the Olive Industry RD&E Program

## MANAGING THE PROGRAM

Since the re-emergence of the Australian olive industry in the mid 1990's, the Rural Industries Research and Development Corporation (RIRDC) has provided very significant financial support and encouragement for a wide range of RD&E projects that have been of considerable benefit to the Australian olive industry. RIRDC has managed these RD&E Projects on behalf of the industry and has a national Industry Advisory Committee (known within the industry as the R&D Committee) to provide advice as required.

The Industry's RD&E activity is defined by the 5 year Olive Industry RD&E Plan which is developed under RIRDC's guidance and funding, in consultation with the Olive industry. The first R&D Plan covered 1998–2002 and the second 2003–2008. In recent years there has been recognition by Australian Primary Industries of the need for greater emphasis in communicating research outcomes in a way that encourages a higher take-up rate of these research outcomes by the end user than has occurred previously. Consequently, this Plan is titled RD&E – Research, Development and Extension and has more focus on the extension aspect.

Another Federal R&D Corporation – Horticulture Australia Limited (HAL) – also manages a small number of Olive Industry RD&E projects, but its olive activity is undertaken in consultation with RIRDC to ensure the proposed HAL projects are in accord with the Industry's current RD&E priorities.

A critical factor in enabling the Industry's RD&E requirements to be achieved is the availability of relevant research expertise: probably more so for an industry in its 'start-up' phase. So as well as assisting RIRDC and the Industry prioritise the many projects submitted for funding, the RD&E Plans help research organisations identify and develop particular areas of expertise that potentially can be mutually beneficial.

In recent years it has been thought prudent to review annually, the RD&E priorities in the current Plan to accommodate changing circumstances e.g. level of RD&E funds available, climate variability, erratic price movements. This review is undertaken by RIRDC in consultation with the Industry Advisory Committee.

The annual RD&E program follows these broad steps:

- **July**
  Via its website, RIRDC calls for RD&E projects based on the current Industry RD&E Plan and reviewed priorities.

- **September**
  Researchers submit a summary of their proposed RD&E project for evaluation.
- **October – December**
  The RIRDC, with advice from the Industry Advisory Committee and within a budgetary framework, selects those RD&E projects that best fit the RD&E Plan's requirements and current priorities.
- **February**
  Researchers of the chosen projects are invited to submit a more detailed project proposal for evaluation by RIRDC before a final selection is made.
- **March**
  Assessment by the Advisory Committee of detailed project proposals
- **April–May**
  Researchers are advised of the outcome of the evaluation of their detailed project proposal.
- **July –June**
  Initial funding is available to successful projects.

## FUNDING THE PROGRAM

The 1998–2002 and 2003–2008 Plans covered what is generally described as the 'start-up' phase of a new industry where there is major financial investment to establish the industry, while income generation can be very limited and nonexistent for a time. Thus RD&E investment tends to be very small during this phase. In the case of olives, commercial olive production volumes that generate reasonable levels of cash flow are reached 5–seven years after the trees are planted.

Never-the-less, within a year or two of its re-emergence, the Australian Olive Industry recognised that to be competitive in the global market place Australian RD&E was required. In this 'start-up' phase, where the industry had virtually no funds available to invest in RD&E, RIRDC's New Plant Products (now New and Emerging Industries) RD&E Program was critically important as together with research organisations they funded the major component of the RD&E projects.

Under Australia's agricultural RD&E programs there is an expectation that as an industry develops from its 'start-up' phase and goes through its 'emerging' phase (which is where the olive industry is in 2009/10) to its 'mature' phase (around 2015–20), it would increasingly contribute to its own RD&E projects. While the industry has invested more into RD&E projects in recent years, it is still heavily dependent on RIRDC and Research Organisations for cash funding (Figure 4.1).

As well as covering RD&E projects initiated under the 2003–08 Plan, the amounts below also include projects initiated in the first industry RD&E Plan (1998–2002) whose timeframe extended into the 2003–2008 Plan timeframe and a small number of projects started in 2008/9.

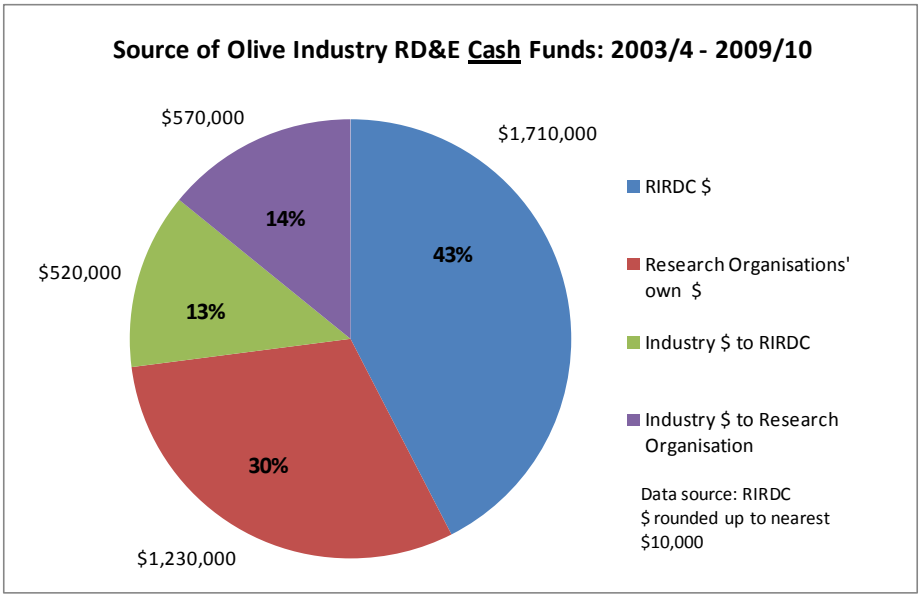



Figure 4.1 Source of olive industry RD&E cash funds: 2003/4 to 2009/10

In some of RD&E projects, the industry may contribute 'in-kind' support such as free labour, equipment etc., which is usually included in the research proposal submission to RIRDC. This support is converted to dollar equivalents and has accounted for about one sixth of the RD&E 'expenditure' during 2003–2010 (Figure 4.2).

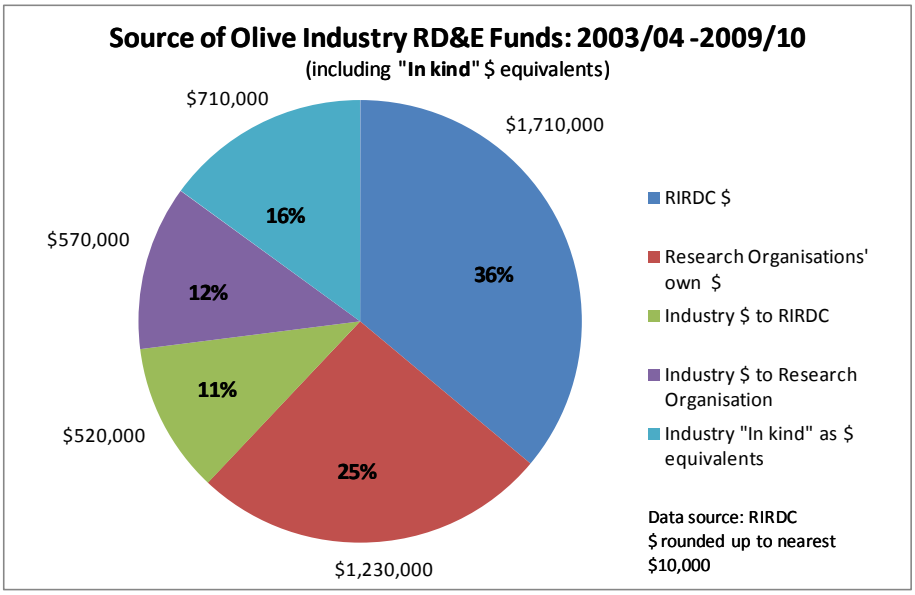



Figure 4.2 Source of olive industry RD&D funds: 2003/04 to 2009/10

In some RD&E programs the Federal Government matches industry RD&E funds under certain conditions e.g. the industry has a statutory levy or voluntary levies which generate around 50 per cent of the RD&E funds on a dollar for dollar basis.

The initial Industry Plan (1998–2003) included a Strategy to create a national statutory levy to fund larger and longer term RD&E projects. In mid 2004 a national ballot for such a levy was narrowly defeated (52 per cent), as was a levy for generic marketing activity (51 per cent).

As the industry moved into the "emerging" phase it was able to provide more voluntary cash funding for projects as indicated in Figure 4.3 in the columns "industry $ to RIRDC" and "Industry $ to research organisation". The increase in industry funding in recent years has been due to the willingness of some very large producers to carry more than their share of the national RD&E investment through voluntary contributions, generally for specific RD&E projects.

The drop in RIRDC's funding in 2009/2010 is a consequence of Federal Government tightening of RD&E fund availability due to the Global Financial Crisis.

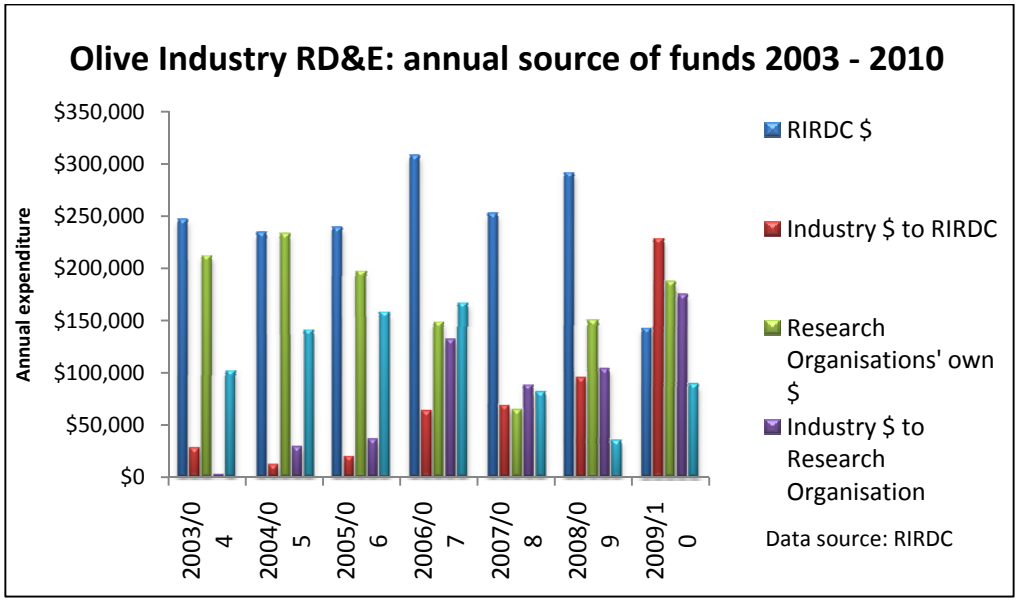



**Figure 4.3 Olive industry RD&E: annual source of funds 2003/04 to 2009/10**

The trend in Australian primary industries is for RD&E funding to be shared across all the industry, generally by introducing a levy. However, this is often a controversial matter and to be introduced, a levy must meet strict government guidelines. Responses to the R&D levy questions in the 2009 Industry Survey suggest Australian olive producers may be more willing to contribute to a levy, or at least are more willing to consider contributing to RD&E efforts (Figure 4.4).

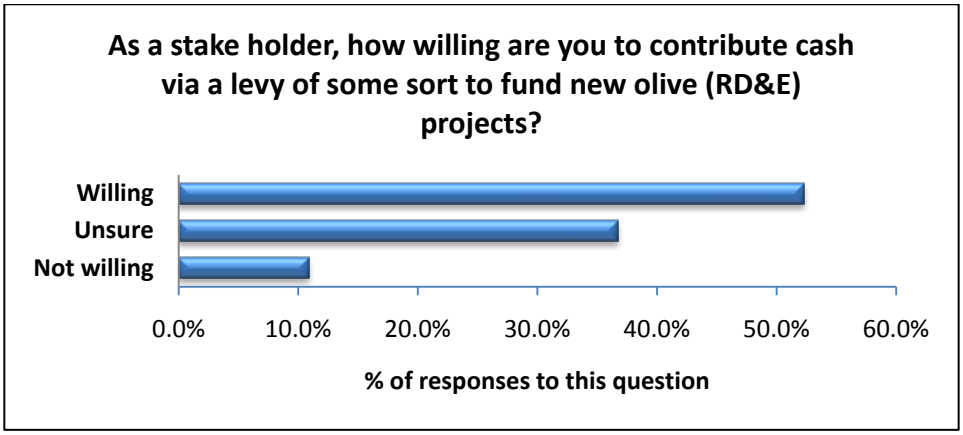



Figure 4.4 Willing to contribute cash via a levy for RD&E

Strategy 4.4 (Table 7.19) in this Plan reactivates the pursuit of a national industry levy and its implementation in order to:

- Undertake more of the potentially beneficial RD&E projects identified in the Chapter. 7
- Increase the capacity of Australian olive RD&E by providing a more sustainable RD&E program that will attract researchers, increase the skill base that can be called on when needed and to boost research infrastructure.
- Ensure a more equitable contribution to RD&E by all producers.

Since the 2004 national ballot, the olive producers in South Australia have introduced a voluntary statutory levy, managed by an agency of the South Australian Government.

## HOW RD&E FUNDS WERE USED IN THE 2003–2008 PLAN

The 2003–2008 R&D Plan addressed four major research areas called **Objectives:**

- **Market and Product Development**
  Objective 1 was designed to create an industry developing and exploiting innovative product and market niches, domestically and overseas, ensuring the profitable marketing of all Australian olive production.

- **Sustainable Production**
  Objective 2 sought commercially viable best-practice production systems that were profitable, efficient and ecologically sustainable.

- **Processing and Product Quality**
  Objective 3 sought consistent production of high quality, healthy, safe olive products (oil, table fruit and others) that meet consumers expectations and in which they have confidence.

- **Communication, Coordination and Training**
  Objective 4 was designed to create informed, collaborative, innovative, highly skilled and internationally competitive industry members.

These four Objectives were underpinned by 39 Strategies, or potential research projects, which are discussed in detail in the next chapter detailing the 2003–2008 R&D Plan achievements.

Table 4.1 below shows the resource allocation and number of research projects for each of these four RD&E Objectives managed by RIRDC during the period 2003/4 to 2009/10.

Table 4.1 Resource allocation for RD&E projects 2003/04 to 2009/10

| | Number of projects | Percent of total projects | Expenditure 2003/4 to 2009/10 | Percent of total expenditure |
|---|---|---|---|---|
| Market and Product Development | 1 | 2% | $20,000 | <1% |
| Sustainable Production | 13 | 28% | $1,361,000 | 29% |
| Processing and Product Quality | 12 | 26% | $2,848,000 | 61% |
| Communication, Coordination and Training | 20 | 44% | $478,000 | 10% |

During 2007/8 and 2008/9 Horticulture Australia Limited (HAL), in collaboration with RIRDC, allocated a further $369,000 (source HAL annual reports) to olive industry research, with two projects addressing Strategies under Objective 2 **Sustainable Production** and one project addressing a Strategy under Objective 3 **Processing and Product Quality**. A further three projects were listed on the HAL website for 2003/4 to 2006/7: two covering Objective 2 and one covering Objective 3 Strategies. Public data was not available to quantify the expenditure on any of these six projects.

## NATURE OF THE 2002/3 – 2009/10 RD&E PROJECTS

Research projects can be defined by the intended nature of their outputs such as *basic, strategic, experimental.* The Australian Bureau of Statistics (ABS) definition splits basic

research into *pure* basic: acquire new knowledge without any other long term benefits in mind and *strategic* basic: aimed at acquiring new knowledge in specified broad areas with the expectation of practical discoveries. None of the 52 RIRDC and HAL olive RD&E projects above appears to fit the *basic* categories. Most fit the other ABS definitions of:

- *Experimental development* where existing knowledge gained though research or practical experience is directed to create new processes, policies and services; or substantially improving existing ones.
- *Applied research* where original work is undertaken to acquire new knowledge with a specific application in view.

All the olive research projects to date have been either *Experimental development* or *Applied research*, as are those proposed in the 2010–2015 Plan.

## RESEARCH ORGANISATION CAPACITY FOR THE OLIVE INDUSTRY

Over the last seven years, the median annual cash (excluding "in kind" equivalent dollars) spend on the RIRDC RD&E program was close to $550,000. With such a small funding base, the industry has been very fortunate that 4 universities, 2 chemical laboratories (1 government and 1 private), a large producer, at least 8 government agencies (Federal & State) and a small number of consultants have been able to establish the skill base necessary to produce the excellent RD&E results thus far.

However, this skill base is very small and the olive industry needs to attract and retain more researchers for it to remain sustainable. This can only happen if the annual RD&E expenditure substantially increases e.g. through a levy. While the recent move to cross-industry collaboration in RD&E areas of common interest such as climate variability, irrigation, fertiliser requirements and registration of chemicals has some potential for cost sharing, most of this Plan's Objectives and their supporting Strategies are olive industry specific.

With annual production now approaching 100,000 tonnes of olive fruit per year, an RD&E levy of about $5 per tonne of fruit, coupled with government dollar-for-dollar funding, less program management costs, would significantly improve the RD&E sustainability of the industry.

## BENEFITS OF RD&E TO THE INDUSTRY

A RIRDC study (Harding, M. 2008) reports that the $2.4m invested in 6 olive R&D projects conducted during 1997 to 2006 had Net Present Values of $86–390m (5 per cent discount rate, 2007 dollars), Benefit Cost Ratios of 22 to 96 and Internal Rates of Return ranging from 29 to 44 per cent. Another RIRDC research report (Ravetti, L. & McClelland, B. 2008) costing $0.16M, estimated potential savings across the industry of around $4m per annum if their findings on fruit loosening agents were implemented.

# 5. 2003–2008 R&D Plan Achievements

## BACKGROUND

The 2003–2008 Industry R&D Plan comprised four R&D Objectives, each with the Strategies to achieve them. The 2009 Industry Survey included this information, plus a synopsis of R&D projects relevant to each Objective. The four Objectives, their Strategies and project Synopses are listed on the following pages in Tables 5.1 to 5.8.

Respondents were asked to indicate the extent to which they believed the four R&D Objectives had been achieved, using a five point rating scale from "nothing" to "fully achieved".

## SUMMARY OF THE 2003–2008 PLAN'S ACHIEVEMENTS

A summary of the *achievement* responses for **all** R&D Objectives is shown Figure 5.1. The Survey responses to the achievement question for each of the four Objectives are shown on subsequent pages in Figures 5.2 to 5.5, with responses grouped into those from producers with 10ha or less and those with more than 10ha.

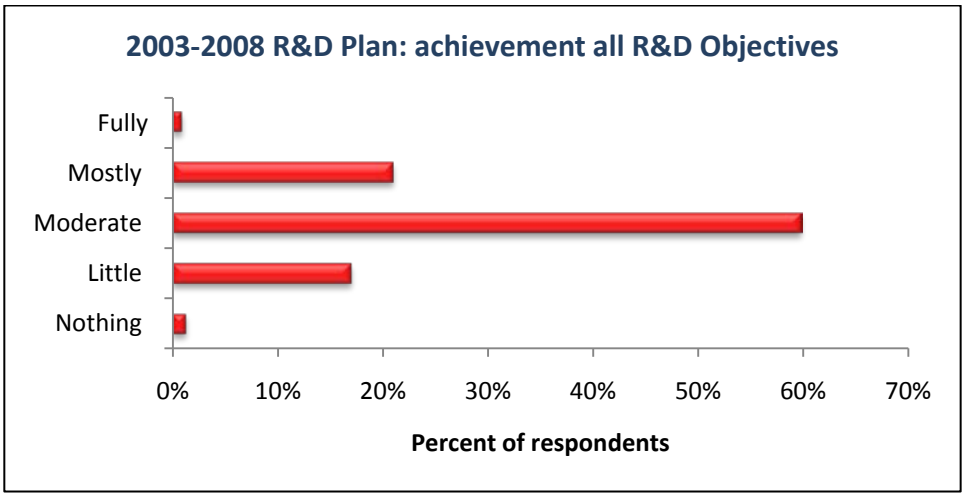



Figure 5.1 2003–2008 R&D Plan: achievement of all R&D objectives

Respondents from all states, both oil and table olive producers and all sized groves were reasonably consistent in their views about what had been achieved. The only significant variation was the answer from growers in the 'above 10ha' grove size who tended to rate the "outcome has been **mostly** achieved" ranking higher. This would suggest that more attention needs to be directed at communicating the new RD&E Plan and its consequential Research Reports to the smaller producers.

Achievement rankings for Objective 2 *Sustainable Production* (Figure 5.3) and Objective 3 *Processing and Product Quality* (Figure 5.4) where higher than Objective 1 *Market & Product development* (Figure 5.2) followed by Objective 4 *Communication, Co-ordination & Training* (Figure 5.5). Given the industry's current scarcity of R&D funds on the one hand, and its 'start-up' phase on the other, the focus of R&D activity on the first three headings is understandable. The AOA's recent introduction of an Industry Code of Practice and Australian Extra Virgin marketing campaign is probably also a factor in achieving more positive ranking for the Marketing and Processing items.

## ACHIEVEMENT OF OBJECTIVE 1

**Objective 1: previous Plan**

**Market & Product development**

**Objective 1** was designed to create an industry developing and exploiting innovative product and market niches, domestically and overseas, ensuring the profitable marketing of all Australian olive production.

Table 5.1 2003–2008 Plan: Objective 1 strategies

| | STRATEGIES |
|---|---|
| 1.1 | Development and implementation of export standards |
| 1.2 | Generic promotion to address competition from imported olive oils and edible fats |
| 1.3 | Development of markets for alternative uses, ie cosmetics, medicinal |
| 1.4 | Definition and explaining the health benefits of olives and olive oil |
| 1.5 | Collection/analysis of industry production data |
| 1.6 | Collection/analysis of domestic and imported oil consumption data |
| 1.7 | Production and marketing networks for consistent supply |
| 1.8 | Promote "Buy Australia" and why (fresh, high quality, healthy). |

Table 5.2 Objective 1: selected R&D projects 2003–2008

| Objective 1: Selected R&D Projects 2003–2008 | |
|---|---|
| Consumer attitudes to Australian Extra Virgin Olive oil | This report details the findings from consumer research undertaken with purchasers of olive oil to provide key metrics around attitudes, behaviours, usage and purchasing with regard to olive oil tracked over time. |
| Australian EVOO Marketing Campaign | A marketing campaign to promote fresh Australian EVOO using the Australian Extra Virgin Brand was developed and launched. |

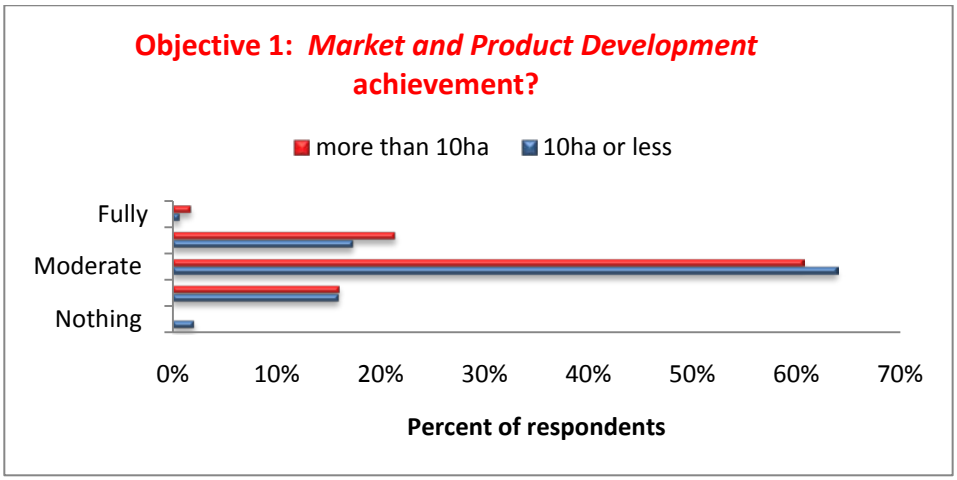



Figure 5.2 Objective 1: *Market and Product Development* achievement?

## ACHIEVEMENT OF OBJECTIVE 2

**Objective 2: previous Plan**
**Sustainable production**

**Objective 2** sought commercially viable best-practice production systems that were profitable, efficient and ecologically sustainable.

Table 5.3 2003–2008 Plan: Objective 2 strategies

| | STRATEGIES |
|---|---|
| 2.1 | Evaluation of the performance and oil characteristics of different varieties |
| 2.2 | Harvest maturity indicators |
| 2.3 | Residue studies to support chemical registrations |
| 2.4 | Strategies to ensure effective pollination |
| 2.5 | Irrigation strategies to reduce water use and optimize yield and quality |
| 2.6 | Cost competitive mechanical harvest technologies |
| 2.7 | Pest and disease management strategies for major climatic zones |
| 2.8 | Integrated Production System that minimises inputs |
| 2.9 | Optimization of grove nutrition, yield and quality |

| | STRATEGIES |
|---|---|
| 2.10 | Tree training systems for maximum yield and quality |
| 2.11 | Risk analysis of olive pest and diseases and appropriate control strategies |
| 2.12 | Evaluation of olives for groundwater recharge and saline water use |
| 2.13 | Cost competitive mechanical pruning technologies |
| 2.14 | Industry specific Quality Assurance system |
| 2.15 | The development of organic olive production procedures |
| 2.16 | Optimization of grove design to maximize yield and quality |

Table 5.4 Objective 2: selected R&D projects 2003–2008

| Objective 2: Selected R&D Projects 2003–2008 | |
|---|---|
| Cross-pollination in olive cultivars | Compatible pollen donors for five commercially important olive cultivars were identified. |
| National Olive Variety Assessment (NOVA) | Growth characteristics, oil yield and composition of many commercial varieties were assessed. The correct genetic identities of varieties were also established. |
| Management of black scale and apple weevil in olives | Strategies to monitor and manage scale and apple weevil including timing of IPM compatible sprays and encouraging natural enemies were identified. |
| Evaluation of key chemicals for pest management in the olive industry | Selection and registration of safe efficient agents against key pests, disease and disorders. To assess nutrition and water regimes on soft nose. |
| Development of olive pest and disease field guide | A grower friendly pocket field guide which includes images and information on major pests and diseases in Australia was produced. |
| Mechanical olive harvesting: Evaluation of fruit loosening agents. | The cost effectiveness and optium conditions for the use of fruit loosening agents were determined. Using the agents did not result in fruit or leaf drop nor were residuals detected in the resulting oils. A general guide to efficient mechanical harvesting was produced. |
| An environmental management systems framework for the olive industry | Environmental practices that benefit the industry from nursery to consumer were proposed. |

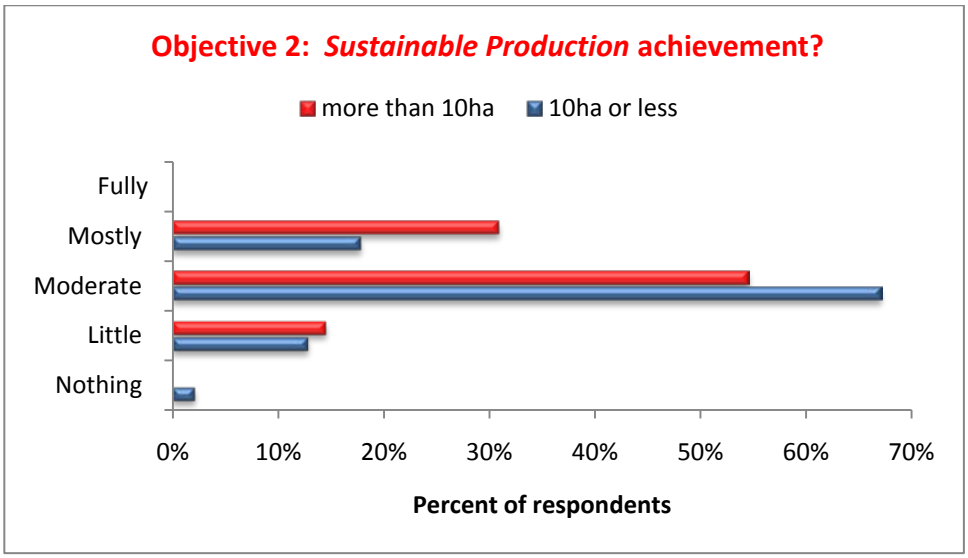



Figure 5.3 Objective 2: *Sustainable Production* achievement?

## ACHIEVEMENT OF OBJECTIVE 3

**Objective 3: previous Plan**
**Processing and Product Quality**

**Objective 3** sought consistent production of high quality, healthy, safe olive products (oil, table fruit and others) that meet consumers expectations and in which they have confidence.

Table 5.5 2003–2008 Plan: Objective 3 strategies

| | STRATEGIES |
|---|---|
| 3.1 | Quality Assurance and monitoring program |
| 3.2 | Olive waste utilization and management techniques |
| 3.3 | Define quality characteristics of olive oil and table olives |
| 3.4 | Minimizing oxidation during processing, storage and transport |
| 3.5 | Processes to maximise the health active components of olive products |

Table 5.6 Objective 3: selected R&D projects 2003–2008

| Objective 3: Selected R&D Projects 2003–2008 | |
|---|---|
| Recycling solid waste from olive oil extraction process | To develop sustainable systems to manage waste from olive oil extraction process. This project showed that 2 and 3 phase olive husk waste can be economically converted into quality compost by using relatively low cost bioremediation technology. |
| Extraction of biphenols from olive mill waste | Valuable phytochemicals can be extracted from olive mill waste (OMW) for use in the food/pharmaceutical industries. This work revealed the effect of ripeness, cultivar, processing & storage on the amount and type of biphenols in OMW. The most biologically active biophenols were also identified. |
| A survey of Australian cultivars for compliance to international standards. | The role of olive cultivar, site and harvest maturity in contributing to natural deviations outside internationally accepted EVOO standards were explored. All oils passed the tests for refined & pomace oil but almost all of the common fatty acids and the sterol campesterol were occasionally outside limits. |
| Harvest timing, sensory analysis and shelf life for optimal olive oil quality | The relationship between harvest timing and oil composition, sensory quality and shelf life so as to determine the optimum harvest period were reported. |
| Technological and biological factor affecting sterols in Australian olive oils | The horticultural and processing practices that impact on sterol composition of the most important Australian varieties were investigated in order to solve international compliance issues, and to minimise nutritional benefits of EVOO. |
| Establish protocols and guidelines for table olive processing in Australia | The project scoped the Australian table olive industry, compiling quality and safety data. A manual for olive growers and processors was developed. |
| Olive oil shelf life and oil stability | To study the effect of variety and growing conditions on shelf life. Exposure to different storage conditions i.e. temperature, bottle darkness and fill level after use were studied over a three year period. The data should lead to objective predictions of “best before’ dates. |
| Characterisation of phenolic compounds in oils produced from frosted olives | The fatty acid profiles and peroxides of oils made from frozen fruit were unaffected provided the fruit was immediately processed into oil. The flavour profiles and polyphenols were affected by freezing. |

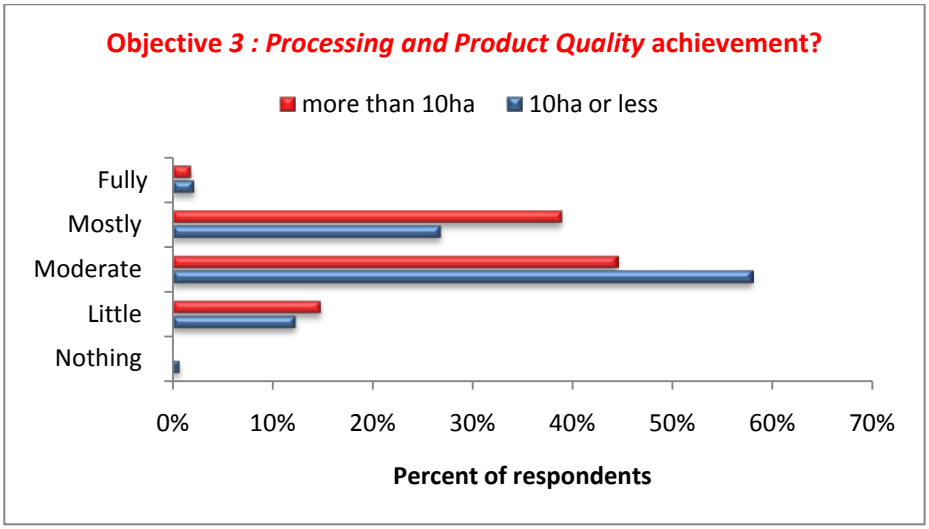



Figure 5.4 Objective 3: *Processing and Product Quality* achievement?

## ACHIEVEMENT OF OBJECTIVE 4

**Objective 4: previous Plan**
**Communication, Co-ordination & Training**

**Objective 4** was designed to create informed, collaborative, innovative, highly skilled and internationally competitive industry members.

Table 5.7 2003–2008 Plan: Objective 4 strategies

| | STRATEGIES |
|---|---|
| 4.1 | Immediate action on development of a statutory levy funding process |
| 4.2 | Improved industry cohesiveness via increased membership of industry bodies |
| 4.3 | Produce a collection of world's best practice production information |
| 4.4 | Formal planning, monitoring, assessment and review systems for R D& E projects |
| 4.5 | Delivery of nationally accredited vocational training programs |
| 4.6 | Curriculum development of olive production and table/oil processing |
| 4.7 | Manufacture of other value-added olive products |
| 4.8 | Strengthening of structures and coordination between industry bodies |

| | STRATEGIES |
|---|---|
| 4.9 | Coordinated and funded State based agency extension delivery |
| 4.10 | National on-line register of grower information, resources and contacts |

Table 5.8 Objective 4: selected R&D projects 2003–2008

| Objective 4: selected R&D Projects 2003–2008 | |
|---|---|
| Translation of findings on Australian oil composition into languages of our trading partners | "The natural chemistry of Australian extra virgin olive oil" translated into Italian, Spanish and Chinese. |
| Increasing research capability | Includes attendance of Australian scientists/policy makers at international conferences and meetings such as the Australian Research Planning meeting, International Fats and Oils Congress and the IOC Taste Panel Supervisors training course. |
| Technical transfer for the Australian Olive Industry | The project educates producers of Australian EVOO about the new Australian Code of Practice, how to apply for the code, and assist growers that have problems meeting the criteria of the code to modify their practices or adopt new practices so that they are eligible to adopt the Code. To produce a high quality journal that will disseminate important information. |
| Proposed statutory levy | A national statutory levy funding process was proposed but narrowly failed to attain the requisite industry support required for adoption. |
| More effective organisational structure implemented | A revised national industry organisational structure is being implemented to improve cohesiveness and co-ordination within industry while encouraging growth of industry organisations. |

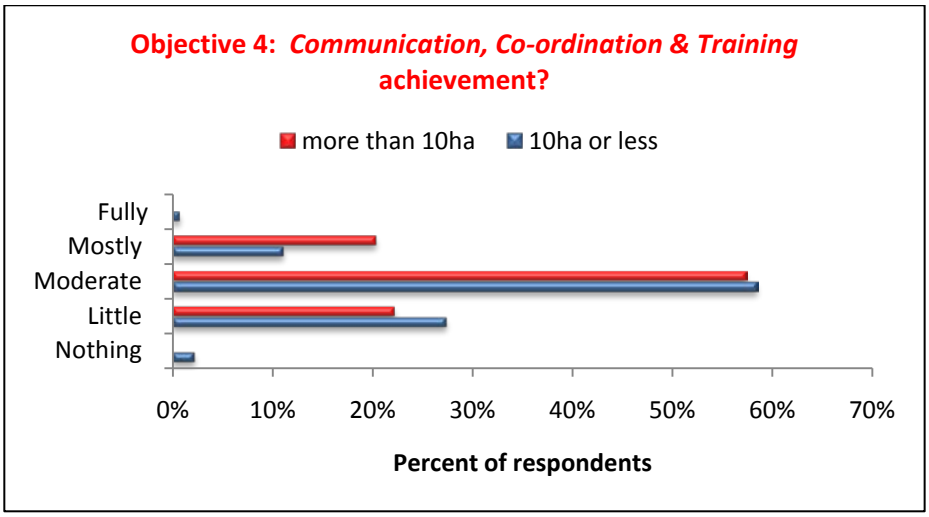



Figure 5.5 Objective 4: *Communication, Co-ordination & Training* achievement?

## DISSEMINATION OF RESEARCH REPORTS

As an introductory question to one on changes made as a result of RIRDC Reports, the question was asked "How often have you read a RIRDC report relating to olives, either on-line or hard copy?" (Figure 5.6)

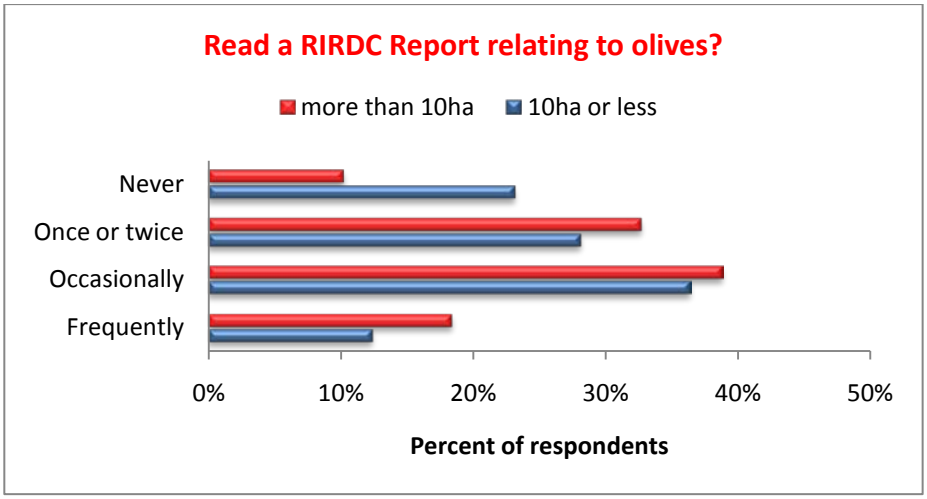



Figure 5.6 Read a RIRDC report relating to olives?

While the overall response rate is positive, there is an opportunity to encourage a higher involvement of the smaller producer who represented 71 per cent of olive growers who responded to the survey.

## CHANGES MADE AS A RESULT OF RIRDC R&D REPORTS

While it is relevant to know if the producers believe the R&D Plan has gone some way towards achieving its Objectives, it is also important to know if producers have changed their operation as a result of the findings in RIRDC R&D Reports. In answering this latter question, 55 per cent of all respondents indicated they had (Figure 5.7). As it was a multiple choice question, the response numbers for each attribute are shown, rather than percentages of the total responses.

The emphasis on changes to olive growing practices is believed to be a reflection of the emerging nature of the industry during the last 8-10 years whereby producers sought the means to improve the quality of their product and profitability of their operation. Some of the "open ended' responses throughout the survey point to a need to either target the Research Report to the demographics of the smaller producer, or follow it up with a complementary document ie more emphasis on research extension.

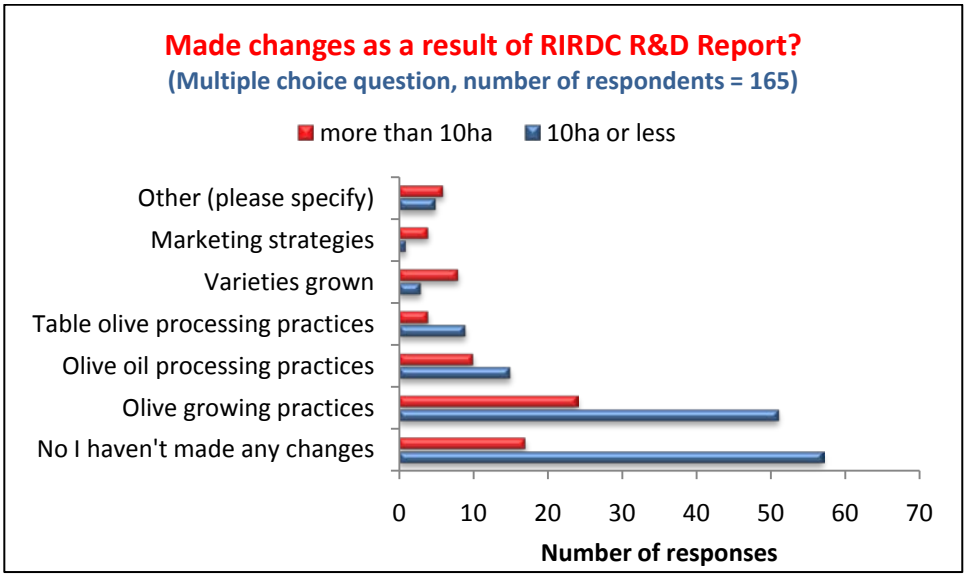



Figure 5.7 2003–2008 Plan: Objective 4 strategies

# 6. Background to the RD&E Program 2010–2015

## KEY THEMES FOR FUTURE RD&E

The key RD&E themes that arose from the 2009 Australian olive industry survey were:

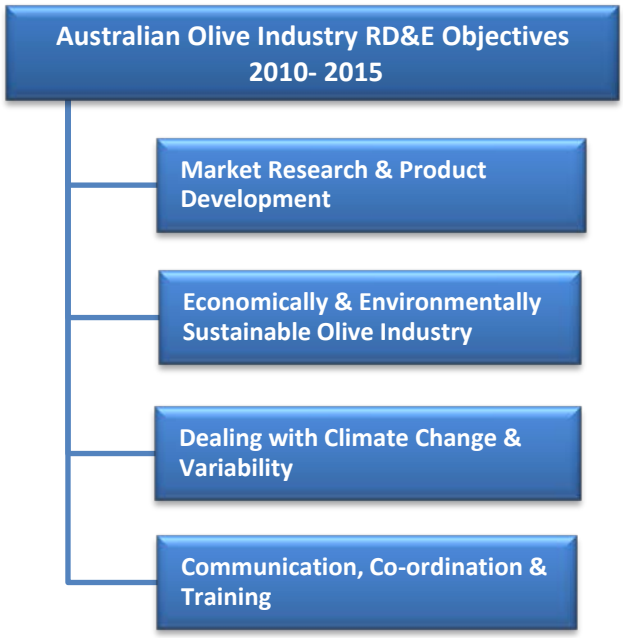
- Ongoing promotion domestically and internationally of the freshness and quality of Australian olive products.
- The need to educate Australian consumers on the types, grades and appropriate use of Australian olive products.
- The need to reduce costs and/or improve productivity in order to make a reasonable financial return in a market place which includes low cost imported products, while remaining environmentally sustainable.
- Strengthening coordination and cohesiveness between industry participants along the supply chain.
- The need for existing growers to be armed with effective strategies which mitigate against the negative financial effects of short term weather extremes while simultaneously adapting to possible longer term changes to rainfall and temperature patterns.
- Programs to build an educated, collaborative, innovative and skilled workforce including a well funded RD&E program that applies across the industry.

## OLIVE INDUSTRY RD&E PROGRAM VISION

*To provide the RD&E outcomes necessary to enable the Australian Olive Industry meet its Vision of being "a sustainable and unified Australian Olive Industry that produces high quality products for domestic and export markets".*

## 2010–2015 RD&E OBJECTIVES

Four broad RD&E Objectives have been identified as being important to the olive industry as shown.




These RD&E Objectives are consistent with the thrust of the two **NATIONAL RESEARCH PRIORITIES** listed below which have been established to assist Australia's primary industries manage their RD&E programs in a focussed, efficient, effective and collaborative way;

**A.** ***Australian Government National Research Priorities*** (current February 2010);

- An environmentally sustainable Australia.
- Promoting and maintaining good health.
- Frontier technologies for building and transforming Australian Industries.
- Safeguarding Australia.

**B.** ***Australian Government Rural Research and Development Priorities*** (current February 2010) (http://www.daff.gov.au/agriculrute–food/innovation/priorities);

- **Productivity and Adding Value**
  - Improve the productivity and profitability of existing industries and support the development of viable new industries.

- **Supply Chain and Markets**
  - Better understand and respond to domestic and international market and consumer requirements and improve the flow of such

information through the whole supply chain, including to consumers.

- **Natural Resource Management**
  - Support effective management of Australia's natural resources to ensure primary industries are both economically and environmentally sustainable.

- **Climate Variability and Climate Change**
  - Build resilience to climate variability and adapt to and mitigate the effects of climate change.

- **Biosecurity**
  - Protect Australia's community, primary industries and environment from biosecurity threats.

- **Supporting the Rural Research and Development Priorities**
  - Improve the skills to undertake research and apply its findings.
  - Promote the development of new and existing technologies

They also align with Goals and Strategies in the;

**C.** ***Rural Industries Research and Development Corporation*** Corporate Plan 2007–2012 (http://www.rirdc.gov.au/about-rirdc/rirdc-coporate-plan-20072012.cfm).

**D.** Australian olive industry's national peak body ***Australian Olive Association's*** Strategic Plan May 2009. (http://www.australianolives.com.au/web/index.php?option=com_content&task=view&id=18&Itemid=232).

## CREATING THE 2010–2015 OLIVE INDUSTRY RD&E OBJECTIVES AND STRATEGIES

The Objectives and Strategies for the 2010–2015 RD&E Plan were primarily sourced from responses by industry participants to the 2009 Australian Olive Industry on-line survey (Appendix 2).

The on-line survey asked two sets of questions about the Objectives and Strategies. The first question asked respondents to rate the relevance of the previous (2003–2008) Objectives and Strategies, for the 2010–2015 Plan. The second set of questions were 'open-ended', asking respondents to nominate their top three R&D priorities over the next Five-Years. After being cross-checked for consistency against the SWOT analysis responses, the results from both questions were merged to provide the four Objectives and twenty eight Strategies that form the basis of the 2010–2015 Plan outlined in Chapter 7.

The consolidated survey responses were put to and discussed by the industry participants who attended the 2009 Olive Expo in Canberra and the Industry RD&E Advisory Committee. The draft Plan was placed on in-line for industry comment, as well as being circulated to the Industry RD&E Advisory Committee and AOA Board, prior to its official release. However, this does not mean a Five-Year hiatus in seeking views on RD&E priorities. Strategy 4.6 under Objective 4 (Table 7.19) offers the potential for all producers to have an annual input to keep the Plan current in the light of changing circumstances. It is envisaged this annual review would be completed about mid way through a financial year before the annual call for submissions for RD&E funding.

## UNDERSTANDING THE STRATEGIES AND PRIORITY TABLES UNDER EACH OF THE FOUR OBJECTIVES

The Strategies (Tables 7.1, 7.4, 7.7, 7.10, 7.13, 7.16 & 7.19) are listed mostly in descending order based on frequency of response and relevance rating in the survey. However, for some Strategies, the Priority shown does not match this order. This has been done in recognition of likely limits to RD&E funding particularly during the early years of this Plan and the potential benefit to the industry.

## THE COMMENT ON EACH STRATEGY TABLE

These comments (Tables 7.2, 7.5, 7.8, 7.11, 7.14, 7.17 & 7.20) are designed to give readers of the Plan a better understanding of the Strategy, or why the Strategy appears at all. Where the 'cross industry cooperation' envisaged in the National Research Priorities on the previous page seems feasible, this has been noted in the Comments.

## FUNDING OF OLIVE INDUSTRY RD&E PROJECTS

The Industry's RD&E projects are funded currently by Government Agencies and voluntary contributions from the industry, the combined value of which fluctuates from year to year. Strategy 4.4 (Table 7.19) under Objective 4, envisages another attempt to introduce a statutory RD&E levy funding process. If successful, research funds from this new stream would only begin flow towards the end of the Plan's lifetime.

For these reasons, and the fact that the Australian Olive Industry is still at an "emerging" stage of development, no attempt has been made to reduce the number of Strategies (28) in the proposed 2010–2015 RD&E Program to match "best estimates" of likely fund levels in coming years, nor to rank them in overall priority order. It is felt more appropriate to undertake this task as part of the annual RD&E Program review envisaged in Strategy 4.6 above, when more up-to-date information is available.

## SIZE OF AN INDIVIDUAL RD&E PROJECT

Each of the Strategies under the four Objectives generally covers a specific area of research. However, to streamline the management of an RD&E Project and where appropriate, the incorporation of more than one Strategy into a Project is encouraged.

# 7. The RD&E Program 2010–2015

## Objective 1: 2010-2015 Plan

## Market Research and Product Development

### OBJECTIVE 1

To provide information which establishes the benefits of Australian olive products.

Table 7.1 2010–2015 Plan: Objective 1 strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 1.1 | Develop a system to collect & analyse production and consumption data. | Immediate |
| 1.2 | Determine factors that affect purchase intentions of olive oil consumers. | Near future |
| 1.3 | Consumer perception of the appropriate uses of olive oil and table olives. | Near future |
| 1.4 | Investigate consumer attitudes to non-traditional retail packaging such as light gauge glass, plastics, 'bag in box', small tins and the resultant effect on purchase decisions. | Near Future |

Table 7.2 Comment on each Objective 1 strategy

| | Comment on each Strategy |
|---|---|
| 1.1 | There is no established system to provide this data, particularly for the smaller producer to access. |
| 1.2 | Recent research (Sheppard, S. 2008 ) has shown that Australian consumers of EVOO have strong loyalties to either the local or the imported product, with nearly 85% not intending to change from the imported product to the local product (and vice versa). Given that currently, imported oils outsell domestic EVOO's, understanding the reasons for this loyalty could help local producers tailor marketing campaigns to convince Australian consumers to consider changing brand/country loyalty in favour of the local products. |
| 1.3 | Recent research (Sheppard, S. 2008) suggests that Australian consumers have a very narrow interpretation of the appropriate use of EVOO. Follow up research on the way in which consumers use EVOO and table olives, and the reasons why they may limit their use of EVOO would help marketers develop strategies to encourage |

| | Comment on each Strategy |
|---|---|
| | the broader use of olive oil and olive products. |
| 1.4 | Heavy dark glass bottles are the current 'standard' in Australia for retail packaging of extra virgin olive oil. This Strategy examines consumer and economic factors surrounding the replacement of standard heavy gauge glass packaging with lighter and more cost effective alternatives (both glass and plastic) which may also provide an added benefit of reducing the industry's environmental footprint. |

Table 7.3 Objective 1: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **1.a** | Annual Production and consumption data available by December 2012. |
| **1.b** | Report available on reasons for customer's reluctance to brand switch and strategies to encourage broader use of olive oil and olive products by June 2013. |
| **1.c** | Report available outlining strategies to encourage broader use of olive oil and olive products by December 2013. |
| **1.d** | Report available by December 2013 on use of light gauge glass, plastic, tin and casks for retail packaging as an alternative to heavy gauge dark glass bottles. |

# Objective 2: 2010-2015 Plan
# Economically and Environmentally Sustainable Olive Industry

## OBJECTIVE 2

To maintain the current high quality product while improving productivity, profitability and environmental management through all stages of the supply chain shown below.


Table 7.4 2010–2015 Plan: Objective 2 – Nursery strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 2.1 | Evaluate international breeding e.g. Cordoba Spain and variety assessment e.g. NOVA programs, for new cultivars or varieties with higher fruit yields and lower grove inputs than varieties currently grown in Australia, and that have a high chance of being grown successfully under Australian conditions. Nominate any potentially suitable cultivars and develop a program to trial them under Australian conditions. | Near future |
| 2.2 | Establish trial plantings of cultivars nominated in 2.1. | Long term |

Table 7.5 Comment on each Objective 2 – Nursery strategy

| | Comment on each Strategy |
|---|---|
| 2.1 | While recent new cultivars have focussed on high density planting enabling more efficient mechanical pruning and harvesting, oil yield per hectare has remained relatively consistent. The aim of this research is to find a cultivar(s) with a significantly higher average oil yield per hectare but requiring lower overall inputs than cultivars grown currently in Australia. Target increase yield 10-25%, decrease in inputs 5-10%.<br><br>Details in the trial program documentation would include a risk assessment of the nominated cultivars to meet the selection criteria in Australia, oil or table olive quality, trial program costs, biosecurity and plant breeder's rights aspects, as well as any grove management techniques required to obtain the fruit yield. |
| 2.2 | Cultivars selected for trial plantings would preferably be grown in at least two of the major commercial growing regions in Australia e.g. central – northern Victoria and north of Perth Western Australia.<br><br>Given the relatively small size of the Australian industry globally and the long lead time and cost of running assessment trials, this project may require collaboration and funding with researchers in other countries already working in this area. |

Table 7.6 Objective 2 – Nursery: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **2.a** | Report completed by December 2013 on the selection of suitable new cultivars for an Australian trial. |
| **2.b** | An assessment trial of new cultivars in progress by June 2015. |


Table 7.7 2010–2015 Plan: Objective 2 – Grove strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 2.3 | Develop sustainable pest and disease management strategies. | Ongoing |
| 2.4 | Mechanical harvest technologies and tree training systems for maximum yield and quality suited to small to medium sized groves, generally with low density planting. | Immediate |
| 2.5 | Harvest maturity indicators suited to small groves. | Near future |

Table 7.8 Comment on each Objective 2 – Grove strategy

| | Comment on each Strategy |
|---|---|
| 2.3 | This is an important ongoing activity as new pests and diseases are identified, or new chemicals released and residue studies required for approval to use the chemicals on olives.<br><br>There is potential for cross-industry collaborative work in this area under current proposals for New and Emerging Rural Industries.<br><br>Although considerable work has been undertaken on this topic, smaller producers indicated a need for activity targeted towards their needs and preferably on a regional basis. Follow-up research is required to identify reasons for this need. |
| 2.4 | Large mechanical harvesting machines and associated tree pruning systems used in big groves have proved very efficient and cost effective. This project is about establishing the economic benefits arising from improving the efficiency and cost effectiveness of mechanical harvesting machines and their associated tree training systems for small to medium sized groves with more traditional low density grove layouts. |
| 2.5 | Smaller producers generally do not have ready access to NIR testing to track oil and moisture content of their fruit to select the harvest time, but rely on visual cues. This strategy seeks a low cost and reliable means of arriving at an appropriate harvest time. |

Table 7.9 Objective 2 – Grove: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **2.c** | A wider range of more environmentally friendly pest and disease treatments available by harvest 2012 and 2014. |
| **2.d** | Report on mechanical harvesting and tree training systems for smaller groves by December 2013. |
| **2.e** | Report on harvest maturity indicators by December 2013**.** |

Table 7.10 2010–2015 Plan: Objective 2 – Processing Strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 2.6 | Development of a quality assurance program, including quality standards, for Australian olive products. | Immediate |
| 2.7 | Waste utilisation and management techniques recognising the geographic dispersion of olive product processing plants in Australia. | Long term |
| 2.8 | Develop guidelines for production of olive products. | Immediate with updates |
| 2.9 | Develop milling processes and guidelines that increase oil yield but maintain or improve oil sensory properties, healthfulness and shelf life. | Near future |

Table 7.11 Comment on each Objective 2 – Processing strategy

| | Comment on each Strategy |
|---|---|
| 2.6 | The current Code of Practice roll-out for olive oil needs to continue and be extended to Table olive production, olive oil Processing and environmental matters.<br><br>This strategy also establishes standards for olive oil and table olives that are legally recognised in Australia |
| 2. 7 | Current Australian research has focussed on composting pomace from olive oil mills. However, other components e.g. 'black water' need practical disposal solutions that recognise the wide geographic separation of Australian olive oil mills compared to the more compact European situation. The waste components from the production of table olives similarly require attention.<br><br>Given the relatively small size of the Australian industry and the cost of developing new, or modifying overseas techniques, for Australia, this project may require collaboration and funding with researchers in other countries already working in this area. |
| 2.8 | The intent of this strategy is to produce easy to read guidelines, particularly for the smaller producer and processor, which enables the production of a high quality and safe olive products with a minimal environmental footprint. See also Strategy 4.1 (Table 7.19). |
| 2.9 | Provide practical guidelines on producing tastier and more stable olive oils while minimising inputs, maintaining or increasing extraction efficiency and reducing the environmental footprint. |

Table 7.12 Objective 2 – Processing: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **2.f** | Industry wide QA program (including Australian olive product standards available as a separate report by December 2012) covering oil and table olive production in operation by harvest 2015. |
| **2.g** | Research project(s) under way by 2012-13 addressing disposal of waste components from olive oil processing, other than pomace, and table olives. |
| **2.h** | Guidelines for olive oil and table olive production available by harvest 2012. |
| **2.i** | Report and guidelines available by harvest 2014 on improved processing techniques. |


Table 7.13 2010–2015 Plan: Objective 2 – Storage strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 2.11 | Investigation into storage of olive oil to minimise oxidation and increase shelf life. | Immediate |
| 2.12 | National industry guidelines for truth in labelling. | Near future |

Table 7.14 Comment on each Objective 2 – Storage strategy

| | Comment on each Strategy |
|---|---|
| 2.11 | This Strategy covers the current research into oil oxidation in all sizes of flexible (bladder) and rigid (plastic and stainless steel) storage vessels and oil shelf life. |
| 2.12 | This strategy arises from producers' concern that some domestic and imported olive oil in the market place is not to the standard claimed on the label. This will be addressed in part by oil standard part of Strategy 2.6, backed-up by Australian consumer protection laws. It appears to be more an 'Extension' matter so producers have a better understanding of what can be done within the current Australian consumer protection framework |

Table 7.15 Objective 2 – Storage: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **2.k** | Report on shelf life available by June 2012. |
| **2.l** | Information paper on truth in labelling for producers available before harvest 2013 |

# Objective 3: 2010-2015 Plan
# Dealing with Climate Change & Variability

## OBJECTIVE 3

To develop strategies for existing and new olive producers to reduce where practicable the effects of climate change and variability.[1]

Table 7.16 2010–2015 Plan: Objective 3 strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 3.1 | Development of survival strategies for groves affected by sudden weather extremes. | Immediate |
| 3.2 | Develop guidelines to minimise water use while at least maintaining current oil yield/ha and quality. | Near future |
| 3.3 | Survival strategies for groves affected by long term changes in weather patterns and resultant effect on fruit production and quality. | Long term |
| 3.4 | Evaluate international breeding programs for new cultivars with high fruit yields in saline condition.<br><br>Nominate any cultivars potentially suited to Australian conditions and develop a program to trial them. | Near future |
| 3.5 | Establish trial planting of cultivars nominated in 3.4. | Long term |

[1] While Objective 3 identifies specific Climate Change & Variability Strategies, Climate Change & Variability should be considered in all research reports associated with this Plan.

Table 7.17 Comment on each Objective 3 strategy

| | Comment on each Strategy |
|---|---|
| 3.1 | This Strategy recognises recent extremes in weather in Australia and provides survival strategies for groves affected by drought, a long run of extreme (high/low) temperatures, or fire damage.<br><br>There is potential for cross-industry collaborative work in this area under current proposals for New and Emerging Rural Industries. |
| 3.2 | This strategy builds on earlier irrigation research, particularly at a regional level, in providing guidance on the minimum irrigation required during each phase of the annual production cycle. |
| 3.3 | This Strategy recognises the reduced water resources throughout the country and changes in rainfall patterns and river flows. To the extent that is currently known, it would also recognise changes to weather patterns and the consequential effect on production and fruit quality.<br><br>It is aimed at providing guidance to existing producers as to what can be undertaken in an attempt to maintain a viable operation under these conditions and assist potential producers in their evaluation of a new grove.<br><br>There is potential for cross-industry collaborative work in this area under current proposals for New and Emerging Rural Industries. |
| 3.4 | With the decreasing availability of high quality water in many areas of Australia, research is required to identify cultivars that thrive in saline soil and/or water conditions, with yields at least matching and input requirements preferably less than, cultivars currently grown in Australia.<br><br>Trial program documentation to cover same aspects as in Strategy 2.1 (Table 7.5).. |
| 3.5 | Cultivars selected for trial plantings would preferably be grown in at least two of the major commercial growing regions in Australia e.g. central – northern Victoria and north of Perth Western Australia.<br><br>Given the relatively small size of the Australian industry globally and the long lead time and cost of running assessment trials, this project may require collaboration and funding with researchers in other countries already working in this area. |

Table 7.18 Objective 3: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **3.a** | Report on potential survival strategies for sudden weather extremes issued by December 2012. |
| **3.b** | Report on reducing water usage by harvest 2015. |
| **3.c** | Report on potential survival strategies for long term climate change issued by December 2014. |
| **3.d** | Report completed by December 2012 on the selection of suitable new cultivars for an Australian trial. |
| **3.e** | An assessment trial of new cultivars in progress by December 2014. |

# Objective 4: 2010-2015 Plan
# Communication, Coordination and Training

## OBJECTIVE 4

To build an educated, collaborative, innovative and skilled industry workforce and a cost effective, well funded Research, Development and Extension program.

Table 7.19 2010–2015 Plan: Objective 4 strategies

| | STRATEGIES (see Chapter 6 as to how priorities were set) | PRIORITY |
|---|---|---|
| 4.1 | Determine effective methods of providing producer education. | Immediate |
| 4.2 | Develop strategies to improve industry cohesiveness and co-ordination. | Near term |
| 4.3 | Strengthening of structures and coordination between industry bodies. | Long term |
| 4.4 | The development and implementation of a statutory levy funding process. | Immediate |
| 4.5 | Develop a nationally accredited vocational training program. | Long term |
| 4.6 | Formal planning, monitoring and review systems for RD&E projects. | Immediate |
| 4.7 | Introduction of an Olive Industry Environmental Management Strategy based on ISO 14001. | Long term |

Table 7.20 Comment on each Objective 4 strategy

| | Comment on each Strategy |
|---|---|
| 4.1 | This Strategy received strong support from producers with groves of 50ha or less, both in the Olive Survey and at the 2009 Olive Expo. Some producers requested the outcomes of R&D projects be published in a form that did not require a consultant to translate it first.<br><br>The challenge is to find an efficient and cost effective means of providing up-to-date producer education, recognising both the geographical spread of olive producers across the continent and variations in their access to on-line communications.<br><br>The spectrum of training envisaged by this Strategy covers not only quality production methods in the grove, but also processing, storage, business planning, environmental aspects and marketing. See also Strategies 2.10 (Table 7.7), 2.18, 2.19 (Table 7.10), and 4.5. |
| 4.2 | This Strategy is focused on encouraging producers to share information so all the Australian industry can benefit and in particular, to recognise that one's main competitor is the overseas producer, not other Australian producers. |
| 4.3 | Considerable progress has been made with the implementation of a new industry organisation; however, around 50% of survey respondents in 2009 still rank this as an area requiring more work. This Strategy will address what activity is still required in this area, and the means to deliver it. |
| 4.4 | While the Australian olive industry has received major benefits under the current ad hoc R&D funding arrangements, there were many potential beneficial research proposals submitted that could not go ahead because of lack of funds. This Strategy is about a program to outline the benefits of a statutory RD&E levy (excluding marketing) for the industry. |
| 4.5 | This Strategy recognises potential skilled labour shortages in coming years and aims to have an accredited training program available to allow training organisations meet consumer demand. Linked to strategy 4.1. |
| 4.6 | This Strategy is designed to create a more structured and transparent process to allow all producers to have an annual input to the industry's RD&E program |
| 4.7 | This Strategy is intended to take the current work on an Olive Industry EMS to the next stage by providing education to the industry on establishing and implementing an industry wide EMS based on ISO 14001. |

Table 7.21 Objective 4: Performance indicators and related measures

| | Performance Indicators and Related Measures |
|---|---|
| **4.a** | An example of an effective producer training system in place by December 2012. |
| **4.b** | National program to improve industry cohesiveness at producer level implemented during 2012/13. |
| **4.c** | Review of producer satisfaction with recent industry restructuring and determination of any further activity needed in this area by December 2014. |
| **4.d** | Subject to the appropriate level of industry support specified by legislation being achieved, statutory levy for RD&E (excluding marketing) gazetted by February 2012. |
| **4.e** | Accredited training programs available in at least one major commercial growing area by December 2014 |
| **4.f** | RD&E review process for all producers to have an input to the RD&E program in place by December 2011. |
| **4.g** | Education program for establishing and implementing an industry wide EMS in progress by December 2014. |

# 8. Proposed RD&E Program Budget

In the emerging olive industry, forecasting the availability of industry funds for RD&E over this Plan's lifetime is challenging. It is too early for annual production patterns to have become established with a reasonable degree of predictability, particularly taking into account the effect of climate change and variability on production. Also, the volatility of the Australian dollar has a significant impact on revenue streams (given that nearly 50 per cent of the Australian olive oil production was exported in 2009 [source ABS]) and production costs. Under these conditions the budget figures can at best be taken as a guide only.

Adding to this forecasting challenge is that currently, industry relies on funding from government and research organisations, as well as voluntary contributions from the industry to fund its RD&E program. This Plan recommends another attempt to establish an industry levy (Table 7.19 Strategy 4.4 p38), but even if agreed to by industry, it would not take effect until near the end of the Plan's lifetime (2013/14).

Thus two budgetary scenarios are presented, scenario one based on the status quo of voluntary contributions and the other based on a statutory levy on fruit production starting in 2013/14.

Comment on the two budgets:

- For **2010/11** the revenue and expenditure figures are based on current project commitments.

- For **2011/12 to 2014/15** the revenue and expenditure figures are estimates in constant dollars ( 2009/10) using the following criteria:

    - Voluntary industry contributions continue at the 2010 rate of about 0.22 per cent of estimated bulk product revenue using AOA production estimates and 10 year average bulk oil price from Jaen of €2.55/l (source IOC –see p4).
    - Fruit production based on AOA estimates and allowing for bi-annual bearing variation of ±10 per cent per annum
    - Statutory levy of nominally $5 per tonne

    - The percentages used to calculate the 2011 – 2015 expenditure figures for each of the 4 Objectives are based on the previous Plan's expenditures (Table 4.1 p16), with modifications to take into account the industry survey preferences for research work to be done in the new Plan, as reflected in the Strategies.

## SCENARIO 1: VOLUNTARY INDUSTRY CONTRIBUTIONS

Table 8.1 RD&E program budget – voluntary industry contributions

| | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|
| REVENUE | | | | | |
| Voluntary industry contribution | $180,000 | $190,000 | $190,000 | $210,000 | $230,000 |
| RIRDC contribution | $290,000[2] | $242,000 | $242,000 | $242,000 | $242,000 |
| Total revenue | $470,000 | $432,000 | $432,000 | $452,000 | $472,000 |
| | | | | | |
| EXPENDITURE | | | | | |
| Obj 1: Market Research | $0 | $64,800 | $64,800 | $67,800 | $70,800 |
| Obj 2: Production/processing | $320,000 | $140,400 | $140,400 | $146,900 | $153,400 |
| Obj 3: Climate variability | $0 | $140,400 | $140,400 | $146,900 | $153,400 |
| Obj 4: Communication et al. | $105,000 | $43,200 | $43,200 | $45,200 | $47,200 |
| Program Management costs | $45,000 | $43,200 | $43,200 | $45,200 | $47,200 |
| Total expenditure | $470,000 | $432,000 | $432,000 | $452,000 | $472,000 |

[2] Includes one-off funding for Levy project.

SCENARIO 2: INDUSTRY LEVY – STARTS 2013/14

Table 8.2 RD&E program budget – levy

| | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|
| REVENUE | | | | | |
| Voluntary industry contribution | $180,000 | $190,000 | $190,000 | | |
| Industry levy | | | | $850,000 | $935,000 |
| Commonwealth contribution | $290,000[3] | $242,000 | $242,000 | $850,000 | $850,000 |
| Total revenue | $470,000 | $432,000 | $432,000 | $1,700,000 | $1,785,000 |
| | | | | | |
| EXPENDITURE | | | | | |
| Obj 1: Market Research | $0 | $64,800 | $64,800 | $255,000 | $267,750 |
| Obj 2: Production/processing | $320,000 | $140,400 | $140,400 | $552,500 | $580,125 |
| Obj 3: Climate variability | $0 | $140,400 | $140,400 | $552,500 | $580,125 |
| Obj 4: Communication et al. | $105,000 | $43,200 | $43,200 | $170,000 | $178,500 |
| Program Management costs | $45,000 | $43,200 | $43,200 | $170,000 | $178,500 |
| Total expenditure | $470,000 | $432,000 | $432,000 | $1,700,000 | $1,785,000 |

[3] Includes one-off funding for Levy project.

# Appendix 1. 2009 Olive Industry Survey: Demographic Results

## INTRODUCTORY COMMENTS

The 2009 Olive Industry survey was conducted over August and September 2009 with 230 responses being received. A copy of the survey is in Appendix 2

The Industry Survey covered;

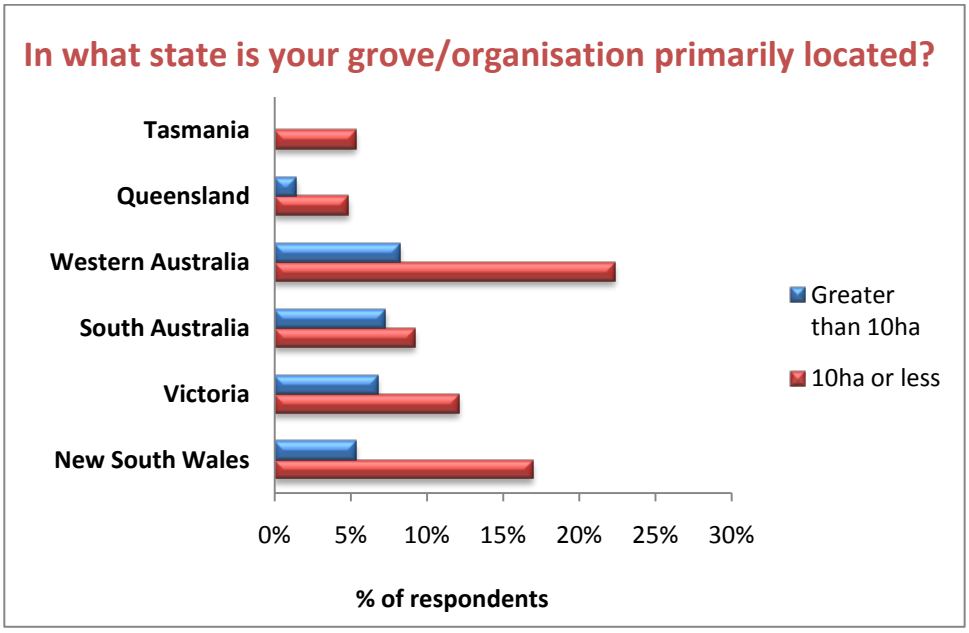
- The demographics of the survey respondents
- What they thought were the Strengths, Weaknesses, Opportunities and Threats (SWOT) for Australia's olive industry.
- What they thought about the R&D outcomes of the 2003–2008 R&D Plan and application to their olive operations.
- What they thought about the relevance of the 2003–2008 Plan's R&D objectives for 2010–2015 Plan.
- What they saw as the top three R&D priorities in the near future.
- Their interaction with RIRDC and attitudes to an R&D levy for the industry.

Results derived from the survey covering all but the first dot point above are included in Chapters throughout this Plan. This Appendix will cover mostly demographic aspects.

## DEMOGRAPHICS OF THE RESPONDENTS TO THE SURVEY

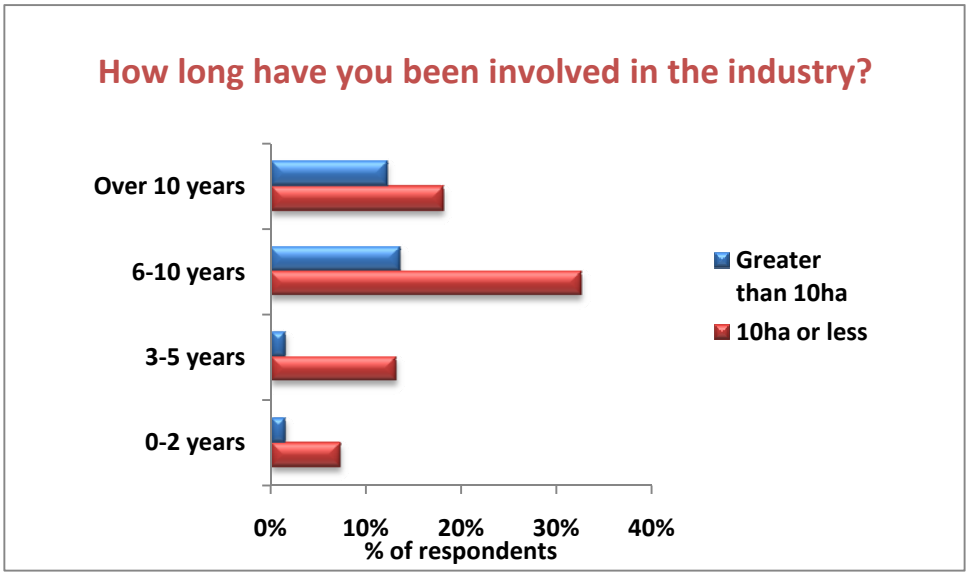
Responses to the survey conducted over August and September 2009 came from all states (Figure A1.1.) 230 responses were received, with 75 per cent of the respondents answering all 34 questions in the survey. 57 per cent of respondents provided their contact details, which is encouraging.

Figure A1.1 In what state is your grove/organisation primarily located?



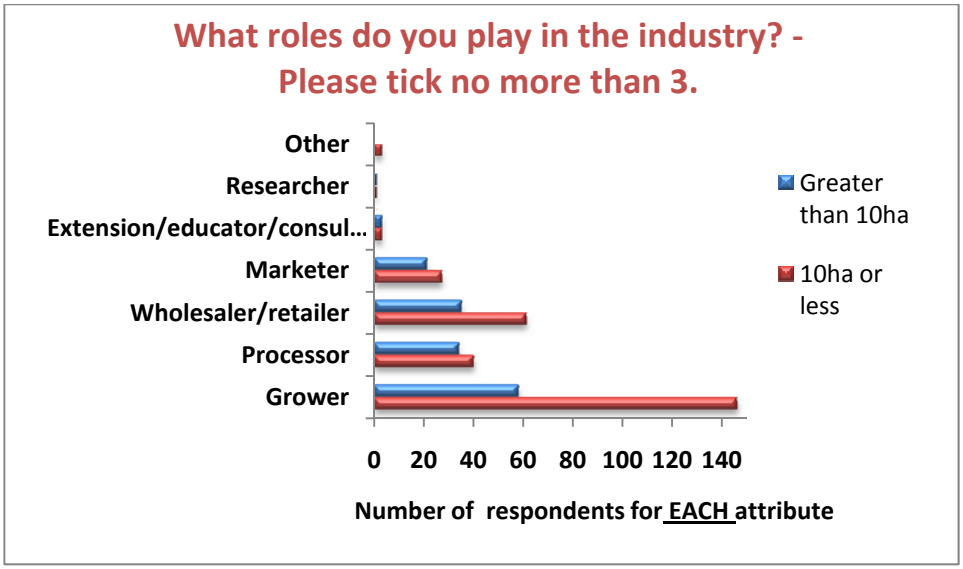

77 per cent of respondents had been involved in the industry for over 5 years. The age profile shown in Figure A1.2 appears to support the industry view that the rate of new groves and hence new entrants, is slowing as the industry tracks towards its 'mature' industry phase.

**Figure A1.2 How long have you been involved in the industry?**



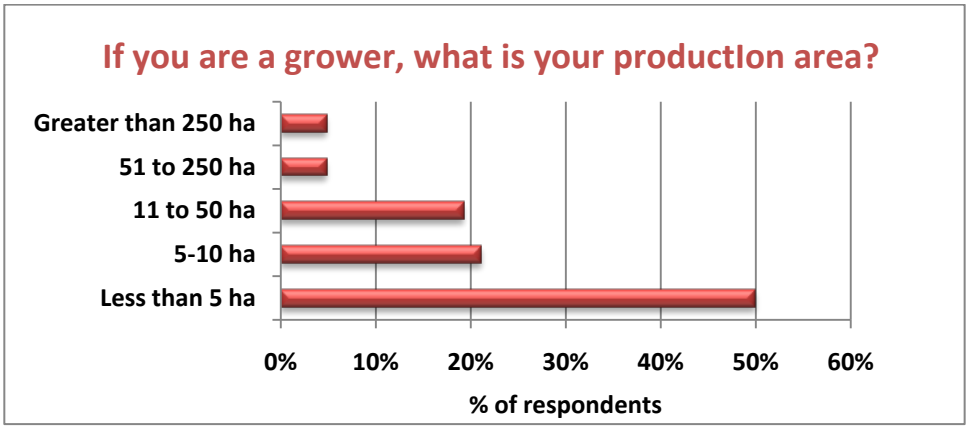

Over 70 per cent of the growers who responded to the survey undertook multiple roles such as processor and wholesaler/retailer (figure A1.3).

**Figure A1.3 What roles do you play in the industry?**



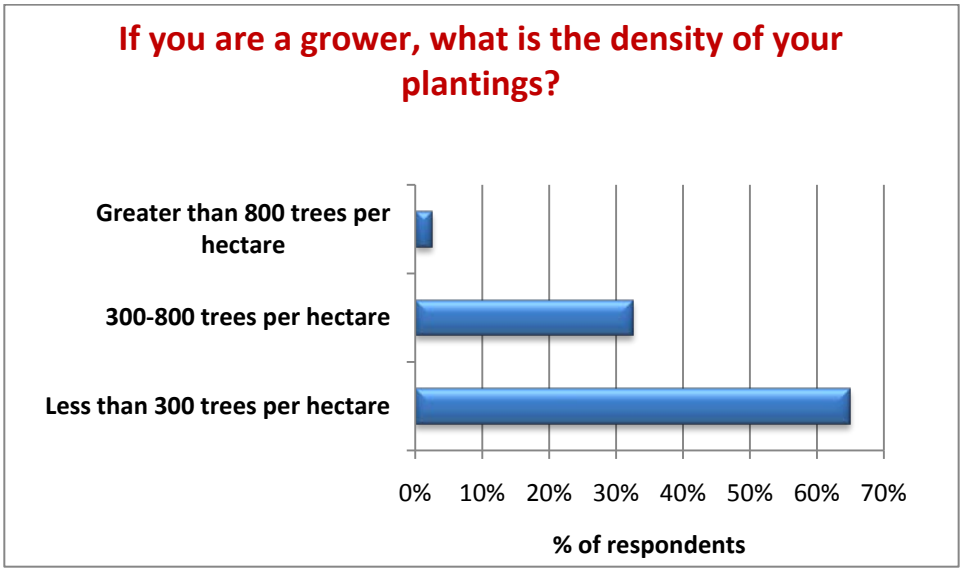
And about 70 per cent of the growers who responded had a production area of 10ha or less (Figure A1.4).

Figure A1.4 If you are a grower, what is your production area?




65 per cent of respondents favoured the traditional tree density of less than 300 trees per hectare (Figure A1.5). Interestingly, the age profile of answers to the *time in industry* question was reasonably similar for tree densities of less than 300 trees per hectare and 300 to 800 trees per hectare.

Figure A1.5 If you are a grower, what is the density of your plantings?




94 per cent of respondents were producing or intended to produce olive oil. Of the respondents producing oil, the volume per annum to grove size data is in Figure A1.6. About 83 per cent of growers sell to the domestic market while 17 per cent sell to both the domestic and export markets.

Figure A1.6 If you are an olive oil processor, how much oil do you typically process each year?

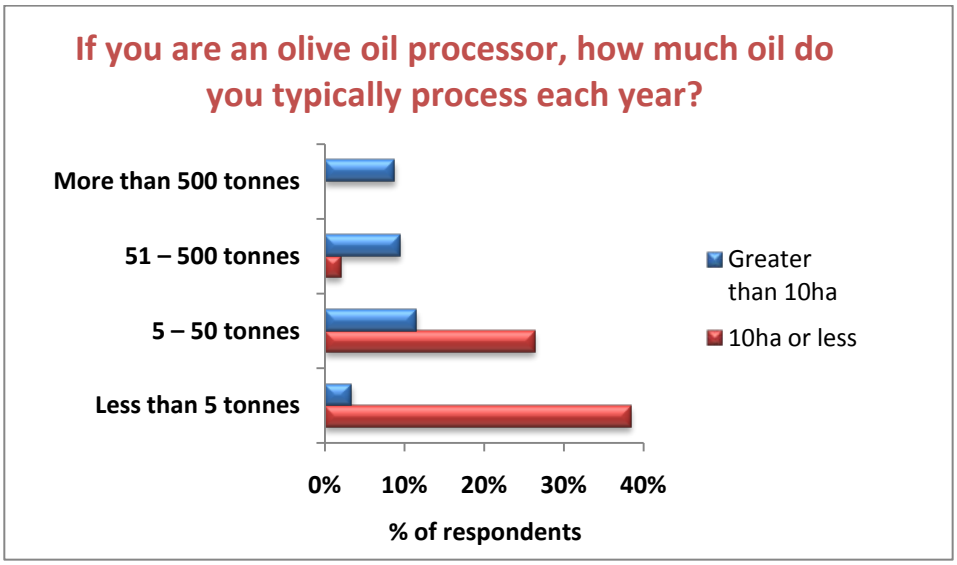
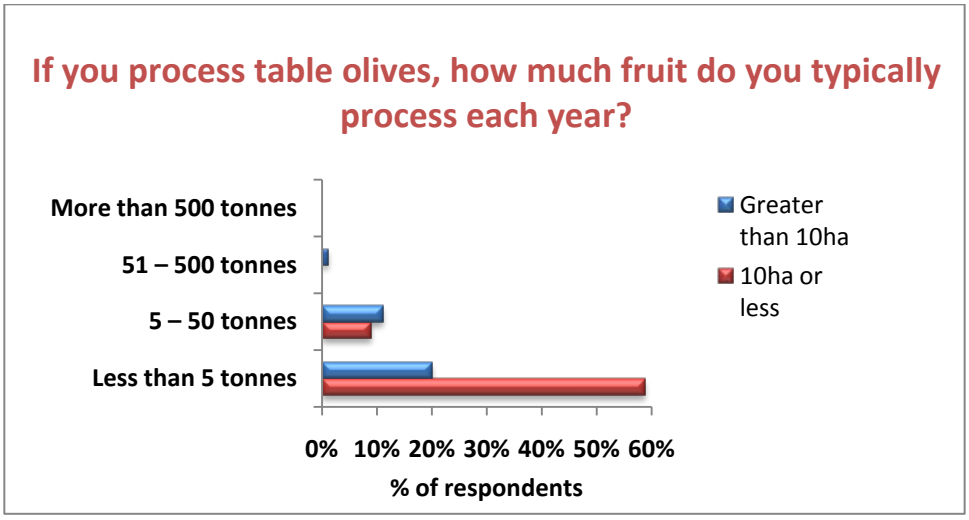



Table olive production volumes are still relatively low with nearly 80 per cent of the respondents to this question producing less than 5 tonnes per annum (Figure A1.7). It is recommended that future surveys expand the 'less than 5 tonnes' attribute to determine what component of this volume is intended for sale as distinct from 'personal use'.

Figure A1.7 If you process table olives, how much fruit do you typically process each year?



## A SNAPSHOT OF WHAT THE RESPONDENTS THOUGHT ABOUT THE INDUSTRY

They are passionate about the freshness and quality of Australian extra virgin olive oil and see these attributes as some of the industry's great strengths. However, they are concerned about their ability to make a reasonable financial return due to high costs of labour, fertiliser, chemicals and fuel; coupled with the low cost of imported oil which they believe sets a price level in the consumer's mind. They are also very concerned about the accuracy of labelling and quality of imported products, the impact these aspects have on the industry generally, and their ability to sell their product for a reasonable return.

Many small to medium producers recognise the need for a more cohesive and co-operative industry, particularly at the processing and retailing level. Over 90 per cent of respondents are members of an industry organisation

Despite the challenges above, most growers surveyed expected that by 2014 they would have similar or greater areas of olives planted to those they have now, and none of the respondents indicated they were about to leave the industry.

# Appendix 2. 2009 Olive Industry Survey

## The Research and Development Needs of the Australian Olive Industry

### 1. Tell us a little about yourself

Thank you for undertaking the survey.

The olive industry comprises a diverse group of people and entities – growers, processors, marketers and researchers to name a few. Each group is likely to have different priorities and needs when it comes to research and development. Therefore it is helpful if we know a little about your role in the olive industry.

**1. What segments of the olive industry are you involved in? – Please tick all that are relevant.**

Olive oil
Table olives
Other olive products

**2. What roles do you play in the industry? – Please tick no more than three boxes.**

Grower
Processor
Wholesaler/retailer
Marketer
Extension/educator/consultant
Researcher
Other (please specify)

**3. How long have you been involved in the olive industry?**

0-2 years
3-5 years
6-10 years
More than 10 years

**4. In what state is your grove/organisation primarily located?**

New South Wales
Victoria
South Australia
Western Australia
Queensland
Tasmania

**5. If you are a grower, what is your total production area?**

Less than 5 ha
5-10 ha
11 to 50 ha
51 to 250 ha
Greater than 250 ha
n/a I'm not a grower

**6. If you are a grower, what do you foresee happening in the next Five-Years?**

I'll have less area planted to olives than today
I'll have approximately the same area planted to olives as today
I'll have more area planted to olives than today

**7. If you process table olives, how much fruit do you typically process each year?**

Less than 5 tonnes
5 – 50 tonnes
51 – 500 tonnes
More than 500 tonnes
n/a I don't process table olives

**8. If you are an olive oil processor, how much fruit do you typically process each year?**

Less than 5 tonnes
5 – 50 tonnes
51 – 500 tonnes
More than 500 tonnes
n/a I don't process olives into oil

**9. In what markets do you currently deal in?**

Domestic market only
Export market only
Both domestic and export markets

**10. If you are a grower, what is the density of your plantings?**

Less than 300 trees per hectare
301-800 trees per hectare
Greater than 800 trees per hectare
n/a I am not a grower

## 2. What you think about what has been achieved already (Part 1 of 4)

**The following four questions list the outcomes that were proposed during the previous 2003–2008 R&D Plan (left column) and a brief summary of the relevant research projects that have been conducted (right column).**

**Please indicate how well you feel that the outcomes relating to "Market and Product Development" proposed at the time have been achieved.**

| Market and Product Development |
|---|
| *The Outcome:* An Industry developing and exploiting innovative product and market niches, domestically and overseas, ensuring the profitable marketing of all Australian olive production.<br><br>In the 2003–2008 Plan we specified that these research/activities would be needed to achieve the above outcome: |
| 1.1 Development and implementation of export standards |
| 1.2 Generic promotion to address competition from imported oils & edible fats |
| 1.3 Development of markets for alternative uses i.e. cosmetics, medicinal |
| 1.4 Defining and explaining the health benefits of olives and olive oil |
| 1.5 Collection/analysis of industry production data |
| 1.6 Collection/analysis of domestic and imported oil consumption data |
| 1.7 Production and marketing networks for consistent retail supply |

| |
|---|
| Consumer attitudes to Australian extra virgin olive oil – This report details the findings from consumer research undertaken with purchasers of olive oil to provide key metrics around attitudes, behaviours, usage and purchasing with regard to olive oil which can be tracked over time. |
| Australian EVOO Marketing Campaign – A marketing campaign to promote fresh Australian EVOO using the Australian Extra Virgin Brand was developed and launched. |

**1. Please indicate the extent to which you feel the proposed outcome above has been achieved.**

Nothing has been achieved
Little has been achieved
A moderate amount has been achieved
The outcome has been mostly achieved
The outcome has been fully achieved

## 3. What you think about what has been achieved already (Part 2 of 4)

**Please indicate how well you feel that the outcomes relating to "Sustainable Production" proposed by the previous R&D plan have been achieved.**

| Sustainable Production<br><br>*The Outcome:* Commercially viable best-practice production systems that are profitable, efficient and ecologically sustainable.<br><br>In the 2003–2008 Plan we specified that these research/activities would be needed to achieve the above outcome: | |
|---|---|
| 2.1 Agronomic performance & oil characteristics of different varieties | Wild olive selection for quality oil production – Wild olive populations across southern Australia were surveyed. Superior trees in terms of oil yield, oleic acid & sensory properties were identified. |
| 2.2 Harvest maturity indicators | Cross-pollination in olive cultivars – Compatible pollen donors for five commercially important olive cultivars were identified. |
| 2.3 Residue studies to support chemical registrations | National Olive Variety Assessment (NOVA) – Growth characteristics, oil yield and composition of many commercial varieties were assessed. The correct genetic identities of varieties were also established. |
| 2.4 Strategies to ensure effective pollination | A study of water requirements of olives from planting to first commercial harvest – The research investigated water requirements and appropriate irrigation strategies in the period from planting to early fruit bearing. |
| 2.5 Irrigation strategies to reduce water use & optimise yield and quality | Management of black scale and apple weevil in olives –Strategies to monitor and manage scale and apple weevil including timing of IPM-compatible sprays and encouraging natural enemies were identified. |
| 2.6 Cost competitive mechanical harvest technologies | Evaluation of key chemicals for pest management in the olive industry – Selection and registration of safe and efficient agents against key pests, diseases & disorders. To assess nutrition and water regimes on soft nose. |
| 2.7 Pest and disease management strategies | Development of olive pest and disease field guide – A grower friendly pocket field guide which includes images and information on major pests and diseases of Australian olives was produced. |
| 2.8 Integrated production systems that minimises inputs | Collation of minor use information for the Australian Olive Industry – Data mining identified the olive pests and diseases of significance in Australia. Control strategies were also identified. |
| 2.9 Optimization of grove nutrition and to optimize yield and quality | Sustainable pest and disease management in Australian olive production – Reports on workshops on the recognition and sustainable management of pests, diseases and beneficial species. |
| 2.10 Tree training systems for maximum yield and quality | Mechanical olive harvesting: Evaluation of fruit loosening agents – The cost effectiveness and optimum conditions for the use of fruit loosening agents were determined. Using the agents did not result in fruit or leaf drop nor were residuals detected in the resulting oils. A general guide to efficient mechanical harvesting was also produced. |
| 2.11 Risk analysis of olive pest and diseases & appropriate control strategies | An environmental management systems framework for the olive industry – Environmental practices that benefit the industry from nursery to consumer are proposed. |
| 2.12 Evaluation of olives for groundwater recharge and saline water use | |
| 2.13 Cost competitive mechanical pruning technologies | |
| 2.14 Industry specific quality assurance program | |
| 2.15 The development of organic olive production procedures | |
| 2.16 Optimisation of grove design to maximise yield and quality | |

**1. Please indicate by ticking the appropriate box the extent to which you feel the proposed outcome above has been achieved.**

Nothing has been achieved

Little has been achieved

A moderate amount has been achieved

The outcome has been mostly achieved

The outcome has been fully achieved

## 4. What you think about what has been achieved already (Part 3 of 4)

**Please indicate how well you feel that the outcomes relating to "Processing and Product Quality" proposed by the previous R&D plan have been achieved.**

### Processing and Product Quality

*The Outcome:* Consistent production of high quality, healthy, safe olive products that meet consumers expectations and in which they have confidence.

In the 2003–2008 Plan we specified that these research/activities would be needed to achieve the above outcome:

| | |
|---|---|
| 3.1 Quality assurance and monitoring program | Recycling solid waste from olive oil extraction process – To develop environmentally sustainable systems to manage solid and wastewater from olive oil extraction process This project has demonstrated that 2- and 3-phase olive husk waste can be successfully and economically converted into good quality compost by using relatively low cost bioremediation technology. |
| | A survey of Australian cultivars to determine compliance to international standards – The role of olive cultivar, site, season and harvest maturity in contributing to natural deviations outside internationally accepted standards for EVOO were explored. All oils passed the tests for refined, heated oils and pomace oil. Almost all of the common fatty acids were outside the limits in some cases. The campesterol level was greater than the international standard in 20 cases. |
| | Harvest timing, sensory analysis and shelf life for optimal olive oil quality – The relationship between harvest timing and oil composition, sensory quality and shelf life so as to determine the optimum harvest period were reported. |
| | Technological and biological factors affecting sterols in Australian olive oils -The horticultural and processing practices that impact on the sterol composition of the most important Australian varieties were investigated in order to solve international compliance issues, and to maximise nutritional benefits of EVOO. |
| | Establish protocols and guidelines for table olive processing in Australia – The project scoped the Australian table olive industry, compiling quality and safety data. A manual for olive growers and processors was prepared. |
| | Olive shelf life and oil stability – To study the effect of variety & growing conditions on shelf life. Exposure to different storage conditions i.e. temperature, bottle darkness and fill level after use were studied over a three year period. The data should lead to objective predictions of "use-by" or "best-before" dates. |
| | Characterisation of phenolic compounds in oils produced from frosted olives – The fatty acid profiles and peroxide values of oils made from frozen fruit were unaffected provided the fruit was immediately processed into oil. The flavour profiles and polyphenols were affected by freezing. These changes were more evident with increasing time between fruit freeze and processing. |
| | Evaluation of new analytical methods to detect lower quality olive oils – To evaluate new methods of measuring key composition aspects to recommend their inclusion in an Australian standard. To evaluate how variety, region and storage conditions influence the results of those tests. |
| | Industry Code of practice – An industry Code of Practice based on revised Australian standards for EVOO was developed and launched. |
| 3.2 Olive waste utilisation and management techniques. | |
| 3.3 Define the quality characteristics of olive oil and table olives | |
| 3.4 Minimising oxidation during processing, storage and transport | |
| 3.5 Processes to maximise the health active components in olive products | |

**1. Please indicate by ticking the appropriate box the extent to which you feel the proposed outcome above has been achieved.**

Nothing has been achieved

Little has been achieved

A moderate amount has been achieved

The outcome has been mostly achieved

The outcome has been fully achieved

## 5. What you think about what has been achieved already (Part 4 of 4)

**Please indicate how well you feel that the outcomes relating to "Communication, Co-ordination and Training" proposed by the previous R&D plan have been achieved.**

### Communication, Co-ordination and Training

*The Outcome:* Informed, collaborative, innovative, highly skilled and internationally competitive industry members.

In the 2003–2008 Plan we specified that these research/activities would be needed to achieve the above outcome:

| |
|---|
| 4.1 Immediate action on development of a statutory levy funding process |
| 4.2 Improved industry cohesiveness via increased membership of industry bodies |
| 4.3 Produce a collection of world's best practice production information |
| 4.4 Formal planning, monitoring and review systems for R D & E projects |
| 4.5 Delivery of nationally accredited vocational training programs |
| 4.6 Curriculum development of olive production and table/oil processing |
| 4.7 Manufacture of other value-added olive products |
| 4.8 Strengthening of structures and coordination between industry bodies |
| 4.9 Coordinated and funded State based agency extension delivery |
| 4.10 National on line register of grower information resources and contacts |

| |
|---|
| Translation of findings on Australian oil composition into the languages of our trading partners – "The natural chemistry of Australian extra virgin olive oil" translated into Italian, Spanish and Chinese. |
| Increasing research capability – Includes attendance of Australian scientists/policy makers at international conferences and meetings such as the Australian Research Planning meeting, International Fats and Oils Congress and the IOC Taste Panel Supervisors training course. |
| Technical transfer for the Australian Olive Industry – The project educates producers of Australian EVOO about the new Australian code of practice, how to apply for the code, and assist growers that have problems meeting the criteria of the code to modify their practices or adopt new practices so that they are eligible to adopt the code. To produce a high quality journal that will disseminate important information. |
| Proposed statutory levy – a national statutory levy funding process was proposed but narrowly failed to attain the requisite industry support for adoption. |
| More effective organizational structure implemented – A revised national industry organizational structure is being implemented to improve cohesiveness and co-ordination withihj the industry while encouraging growth of industry organizations. |

**1. Please indicate by ticking the appropriate box the extent to which you feel the proposed outcome above has been achieved.**

Nothing has been achieved

Little has been achieved

A moderate amount has been achieved

The outcome has been mostly achieved

The outcome has been fully achieved

## 6. How relevant are the previous objectives today?

The following lists the planned research outcomes for the previous 2003–2008 research and development plan. Please indicate by ticking the appropriate box the extent to which you feel they remain important.

### 1. Market and Product Development

| | Crucially important | Very important | Moderately important | Somewhat important | Not important |
|---|---|---|---|---|---|
| Promotion of the Australian olive industry to consumers | ☐ | ☐ | ☐ | ☐ | ☐ |
| Development of alternative olive products | ☐ | ☐ | ☐ | ☐ | ☐ |
| Collection/analysis of production and consumption data. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Development of market and marketing information. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Education of consumers in handling and use of olive products. | ☐ | ☐ | ☐ | ☐ | ☐ |

## 2. Process and Product Quality

| | Crucially important | Very important | Moderately important | Somewhat important | Not important |
|---|---|---|---|---|---|
| Development of a quality assurance program | ☐ | ☐ | ☐ | ☐ | ☐ |
| Waste utilisation and management techniques | ☐ | ☐ | ☐ | ☐ | ☐ |
| Definition of quality characteristics of olive oil and table olives | ☐ | ☐ | ☐ | ☐ | ☐ |
| Strategies to minimise oxidation | ☐ | ☐ | ☐ | ☐ | ☐ |
| Maximising the health active components in olive products | ☐ | ☐ | ☐ | ☐ | ☐ |
| National industry guidelines for truth in labeling | ☐ | ☐ | ☐ | ☐ | ☐ |
| Best-practice guidelines for table olive and oil production | ☐ | ☐ | ☐ | ☐ | ☐ |

## 3. Sustainable production

| | Crucially important | Very important | Moderately important | Somewhat important | Not important |
|---|---|---|---|---|---|
| Varietal assessment of oil yield, agronomic performance and quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| Harvest maturity indicators | ☐ | ☐ | ☐ | ☐ | ☐ |
| Residue studies to support chemical registrations | ☐ | ☐ | ☐ | ☐ | ☐ |
| Strategies to ensure effective pollination | ☐ | ☐ | ☐ | ☐ | ☐ |
| Irrigation strategies to minimise water use and optimise yield/quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| Mechanical harvest technologies | ☐ | ☐ | ☐ | ☐ | ☐ |
| Pest and disease management strategies | ☐ | ☐ | ☐ | ☐ | ☐ |
| Strategies to minimise inputs including organic processes | ☐ | ☐ | ☐ | ☐ | ☐ |
| Grove nutrition to optimize yield and quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| Tree training systems for maximum yield and quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| Mechanical pruning technologies | ☐ | ☐ | ☐ | ☐ | ☐ |
| Post harvest handling strategies | ☐ | ☐ | ☐ | ☐ | ☐ |
| Promotion of strategies to minimise the spread of olive as a weed | ☐ | ☐ | ☐ | ☐ | ☐ |

## 4. Communication, co-ordination and training

| | Crucially important | Very important | Moderately important | Somewhat important | Not important |
|---|---|---|---|---|---|
| The development of a statutory levy funding process | ☐ | ☐ | ☐ | ☐ | ☐ |
| Grower education on quality production methods | ☐ | ☐ | ☐ | ☐ | ☐ |
| Improved industry cohesiveness and co-ordination | ☐ | ☐ | ☐ | ☐ | ☐ |
| Design and delivery of nationally accredited vocational training programs | ☐ | ☐ | ☐ | ☐ | ☐ |
| Strengthening of structures and coordination between industry bodies | ☐ | ☐ | ☐ | ☐ | ☐ |

## 7. Tell us what you think about the future of the industry

1. **What do you think are the greatest strengths of the Australian olive industry?**

2. **What do you think are the greatest weaknesses of the Australian olive industry?**

3. **What problems do you think the Australian olive industry will face over the next 5 years?**

4. **What opportunities do you think the Australian industry could take advantage of?**

## 8. Involvement with RIRDC's programs and use of research outputs

The Rural Research and Development Corporation distributes and manages research industry research funds and disseminates research outcomes in a variety of ways. We would like to know more about your understanding of their role in this regard, and also how you feel the industry R&D effort should be funded.

**1. What has been your past involvement with RIRDC olive projects?**

None
I have contributed cash
I have contributed in kind
I have contributed in cash and in kind

**2. Are you a member of an industry organisation?**

No
Yes

**3. How often have you looked at the RIRDC website in the last two years?**

Frequently
Occasionally
Once or twice
Never

**4. How often have you read a RIRDC report relating to olives (on-line or hard-copy)?**

Frequently
Occasionally
Once or twice
Never

**5. How much should industry contribute to the cost (in cash) of undertaking olive related R&D made available by this program?**

None
10%
25%
50%

**6. As a stakeholder, how willing are you to contribute cash to new R&D projects.**

Very willing
Willing only if I benefit directly
Not prepared to
Unsure

**7. As a stakeholder, how willing are you to contribute cash via a levy of some sort to fund new R&D projects?**

Not willing
Unsure
Willing

**8. If you were prepared to contribute to R&D via a levy, what do you think is a fair method to arrive at your contribution figure?**

Cents per tonne of fruit harvested
Cents per tonne of oil produced
Cents per tree
Cents per hectare of trees
Other (please specify)

**9. As a result of the findings of research funded by the RIRDC have you changed (tick the boxes relevant to you):**

No I haven't made any changes
Olive growing practices
Olive oil processing practices
Table olive processing practices
Varieties grown
Marketing strategies
Other (please specify)

## 9. Where should we go now?

**1. What do you see as the top three R&D priorities for your industry over the next Five-Years? Please respond in specific terms rather than nominating a general area e.g. not simply stating "irrigation", but "irrigation regimes using saline water".**

1.

2.

3.

**2. If you would like to make any other comments or suggestions please add them here.**

**3. Your details (optional but necessary if you wish to receive more information on this project)**

Your Name:
Your email address:
Your daytime phone number:

**Thank you for your time and sharing your views.**

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# Australian Olive Industry RD&E Plan 2010–2015

Pub. No. 10/155

The renaissance of the Australian olive industry which began in the mid-nineties triggered a period of rapid growth, expanding from a cottage industry entering its 'start-up' phase, to what is now an 'emerging' commercial industry with domestic and export retail sales of around an estimated $180m per annum. It is expected to become a 'mature' industry around 2015–2020.

This new Five-Year Plan is the third for the olive industry and is more comprehensive than previous Plans. It provides the essential framework with which to manage the allocation of funds to RD&E projects and provides guidance to research institutions and those with relevant research expertise. It also identifies research expertise required in future years.

RIRDC has been the major contributor of RD&E funds to the olive industry, providing 43% of the cash funding required over the last seven years. Other major contributors have been research organisations at 30% with the balance being provided by industry. In coming years the industry contribution will need to increase if its RD&E outcomes are to keep it ahead of its international competitors.

This report is an addition to RIRDC's diverse range of over 2000 research publications and forms part of our New Plan Products RD&E program, which aims to facilitate the development of new rural industries based on plants or plant products that have commercial potential for Australia by investing in RD&E.

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