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R&D Plan for the Australian Coffee Industry 2003-2008
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Foreword

The coffee industry in Australia now appears to be moving from a very early stage into a more developed industry. While only capable of providing a small part of the country's needs in coffee, it is focussing on the high value end of the business. As such it appears to have a significant future. It is attracting significant capital investment and creating employment in rural Australia both on farms and in processing. Australian branded coffee is attracting attention from internationally known brand managers and new Australian brands are making their presence felt.

Rural Industries Research and Development Corporation, and its predecessor body, have been supporting R&D on this crop for over twelve years. With significant investment and large scale orchards emerging it is time to prioritise the industry's needs for future research and development so that the work closely mirrors the needs of the emerging industry and involves, as commercial partners, members of the industry.

This R&D plan has three main purposes:

- to present the rationale for the coffee R&D program that RIRDC will support and manage on behalf of the Commonwealth government and the industry;
- to provide clear signals to the industry, to Commonwealth and State governments and to the research community regarding R&D needs and priorities for the period 2003-2008; and
- to encourage discussion that will enable the needs of the industry to be further defined and responded to as the industry progresses.

It is envisaged that it will be revised from time to time as research needs and priorities change.

The plan stems from a workshop held in Brisbane in December 2002 at which grower and downstream members of the coffee industry along with researchers and consultants identified and prioritised what they believed to be the industry's main R&D needs and opportunities. Their ideas have since been canvassed within the industry and with researchers and where appropriate, modified and extended. Any comments on the Plan should be referred to the Research Manager, Max Bourke at RIRDC.

Most of our publications, including a number on coffee R&D, are available for viewing, downloading or purchasing online through our website:

- downloads at www.rirdc.gov.au/reports/Index.htm
- purchases at www.rirdc.gov.au/eshop

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Introduction

The advent of machine harvesting triggered the re-establishment of the coffee industry in Australia in the mid-1980s and the Australian industry is now making its mark on domestic and export markets. However, continued investment is required to maintain a high quality and consistent product capable of competing successfully in a highly competitive world market.

Background

The Australian coffee industry began in the 1880s when it produced high yielding and high quality Arabica coffee from the northern rivers region of New South Wales, south-east Queensland and north Queensland. At the industry's peak 180 hectares were planted in north Queensland alone, while in New South Wales, 12 percent of the colony's requirements were produced in the northern rivers region in 1889. However the industry did not survive past the 1920s because Australia's high labour costs could not compete with those of developing countries. Harvesting coffee cherry by hand is highly labour intensive and, until recently, Australia imported all of its coffee requirement, which stands at 45000 tonnes of dry green bean (DGB) (the final dried stage before roasting) annually.

Harvesters

The coffee plant remained a ubiquitous backyard tree in coastal New South Wales and Queensland for most of the 20th century until British engineer Roy Scudder developed a successful harvester in Brazil in 1978. The first machine was imported in 1983 to harvest coffee near Mareeba in North Queensland and several harvester prototypes were then developed and trialed in Australia during the late 1980s and the 1990s. The industry now has a variety of machines, with improved capability for selective harvesting of the ripe cherry and processing techniques to remove immature 'greens' from the sample.

At today's labour costs, the harvester is able to reduce the harvesting cost component of dry green bean from over \$6 per kg for hand-harvesting, down to 60 cents per kg, one tenth of the cost of hand harvesting. A machine can harvest up to 10,000 trees in a day.

Commercialisation

The high quality coffee produced from early Australian plantings created interest among growers, buyers, marketers, research agencies, visitors and government, and Australia's first coffee R&D workshop was organised in June 1988 by the forerunner of the RIRDC. This led to government funding for an integrated program of research to develop the basic requirements for establishing a commercial coffee industry in

Australia. Projects on variety evaluation, crop management, harvester development, processing and quality evaluation culminated in the publication of *Coffee growing in Australia – a machine harvesting prospective* in 1995, and a second edition in 1997. The first significant expansion in plantings and production occurred after 1998 following the successful performance of the 'local' product against international competition in blind test panel tests, together with major improvements in production, harvesting and processing technology. North Queensland production increased from 180 tonnes in 1998 to approximately 300 tonnes in 2002, and NSW production increased from 20 tonnes in 1998 to 100 tonnes in 2002.

There are now around 740 hectares planted in Australia and production is predicted to increase significantly when these areas begin commercial production. Approximately 500 tonnes dry green bean was produced in 2002 and this is expected to exceed 1600 tonnes by 2008.

This commercial scale of production has renewed the need for a professional and coordinated R&D program to address the many key issues confronting the expanding coffee industry in each growing region.

Production levels

There are now four coffee growing regions in Australia – the tropical tablelands of far north Queensland, the central Queensland coast, subtropical south-eastern Queensland and north-eastern New South Wales. Far north Queensland (350 ha) and north-eastern NSW (250 ha), are the major production areas, comprising 80% of the Australian total production area in 2002.

Coffee producing regions – planted area and production of Australia - 2002

Region	Area planted (ha)	No. of growers	Production of dry green bean (DGB) 2002	Expected production GB in 5 yrs 2007/8
Far north Queensland	350	10	300	800
Central Queensland coast (Mackay – Proserpine)	20	3	5	50
(Yeppoon)	100	1	80	200
South-eastern Queensland (Caboolture – Nambour)	20	10	10	50
North-eastern NSW	250	120+ *	100	500
TOTAL	740 ha		495 tonnes	1600 tonnes

* Prior to 1998, the NSW industry comprised a large number of small-scale producers producing less than 20 tonnes per year total for the region.

The coffee market

The world coffee market is enormous, with almost 8 million tonnes of dry green bean (DGB) traded with a farm gate value of over US \$10 billion and a retail value of over US \$50 billion.

Australia imports virtually all of its coffee, around 45,000 tonnes of DGB for a total retail sales value of \$636 million in 2001. Coffee consumption per capita has doubled over the last 30 years in Australia, from 1.2 to 2.4kg per capita in 1998/99; while tea consumption has declined from 1.2kg to 0.9kg per capita, a decrease of 60% over the same period (ABS 2000).

Instant coffee comprises 80 percent of total sales, with a value at \$516 million, though this percentage is declining slowly. Roast and Ground coffee is a growing sector of the market, currently worth around \$96 million in total retail sales value (Euromonitor, March 2002). This market sector has increased by 28 percent over the last 5 years and continues to increase as Australian consumers are beginning to appreciate the higher quality and the convenience of preparation provided by modern appliances now available.

Australia grows only the higher quality Arabica coffees used in the specialty or roast and ground market. Australian growing conditions are not suitable for producing the lower quality Robusta used in instant coffee which is grown in the lowlands of tropical countries. Australia imports around 12–15000 tonnes of Arabica annually for the Roast and Ground market. Australia's total production of just over 600 tonnes DGB in 2002 is only one percent of the total volume of coffee imported or 6 percent of the total volume of Arabica imports. 'Specialty' coffees include premium, single origin, shade grown, organic, free trade coffee etc. This category is growing momentum internationally, but from a very small production base.

Prices

Price premiums have been achieved for the small quantities of Arabica coffee produced in Australia over the past 10 years. Around \$8-9 per kg of DGB is paid consistently compared with the average imported price of \$3-4 per kg. These price premiums also extend to the roasted product with local coffee retailing for \$35 per kg and the imported product around \$25-30 per kg.

As production increases significantly over the next five years, these price premiums are expected to be challenged. Whether the price premium can be maintained will depend on the ability of the Australian industry to produce a consistent high quality product, and the success of marketing strategies devised by the industry's major suppliers to exploit the comparative advantages and market opportunities for the 'new' product. A price premium is seen as essential for the viability of the Australian industry. Price premiums are being achieved in Australia for high quality and unique speciality coffees – up to over \$50 per kg roasted.

An encouraging trend in consumer preferences world wide emerged in the 1990s as the demand and prices increased significantly for better quality single origin coffees produced from accredited 'organic' or 'natural production' systems regarded as socially and environmentally appealing. Such opportunities are available to the Australian industry where such systems are already practised.

Issues Facing the Industry

Demand exceeds local supply

The current rate of growth in demand at 6 percent in the roast and ground (R&G) market equates to around a thousand tonnes of extra market volume for Arabica coffees annually in Australia. This far outstrips the expected total production in 2007/8 of just 1600 tonnes.

Competitive pricing

The world coffee market however is highly competitive and Australian producers will have to become highly efficient in their production costs, consistent in quality standards, and develop well-targeted marketing strategies to compete successfully with the imported product.

Limited potential for expansion

The potential for expansion of the Australian industry is limited, particularly in the sub-tropical areas where the shortage of suitable frost-free, protected land with adequate suitable water and low to moderate slope to suit machine harvesting exists. High land prices and competing land uses including increasing urbanisation are eroding the area available for commercial coffee production of a high quality product with minimal pest and disease pressure.

Irrigation potential

Larger areas of suitable land are available on the central Queensland coast and the tablelands of Far North Queensland where the climatic advantages of a distinct dry stress period exists in spring to enable flowering and harvesting to be manipulated by irrigation. Availability and cost of adequate suitable water for irrigation and extreme high temperatures during the critical bean sizing period may also limit productivity.

Environmental advantage

Prospects for developing an environmentally sound high priced product for export appear extremely good, particularly where the pest and disease pressure is low and is being managed using natural or bio-control measures. It would appear this is a natural comparative advantage the Australian industry should explore thoroughly in its marketing strategy for Australian coffee.

Cupping quality

Cupping tests of Australian coffees show there is a distinct difference in the flavour profile and quality characteristics between the tropical and sub-tropical products, due probably to the different climatic conditions. It is therefore likely that the two product styles will target different end uses of the market, and thus complement each other.

Processing quality

Poor processing at wet mill, drying and grading have all allowed poor quality coffees to reach consumers and give a bad reputation for Australian coffees. There is a need to produce consistent quality and put in place a system which recognises and rewards quality production and differentiates high quality coffee.

Key Issues for R&D for 2003/08— Process & Priorities

Process

Following consultation with industry and R&D providers, four groups identified themselves within the Australian coffee industry. These groups were:

Group 1: Newly formed Australian Coffee Industry Association (ACIA)

NSW Coffee Growers Association (NSWCGA)

North of Brisbane Coffee Group

Sub-tropical Coffee Growers Co-op, and

North Coast Agricultural Development Association (NORADA)

Group 2: Australian Coffee Growers Association (ACGA), based in far north Queensland

Group 3: NSW Commercial Coffee Growers Group (representing 80% of the New South Wales production area)

Group 4: AustralAsian Specialty Coffee Association (AASCA) (representing roasting and marketing interests)

With support from RIRDC, and state R&D providers, each group was asked to meet and discuss within their organisations the major issues requiring R&D in the industry and present them in priority order through their nominated representative at an R&D priority setting meeting in Brisbane on December 9, 2002. Each group was also asked to nominate its funding capacity to support the nominated priorities.

Representatives from each group presented and justified their nominated priority issues to the combined meeting where all of the issues were discussed and prioritised.

An agreed priority list was then developed and circulated to participating organisations for the information of their members.

Agreed priority areas for R&D

1. Registration of essential chemicals

For the Australian coffee industry to operate legally and efficiently the immediate priority was to develop a list of priority chemicals with a preferred focus on environmentally sound products which are compatible with biological control and integrated pest management systems. Development of a quality assurance system could not be undertaken until the essential products required for commercial production are covered by permit or registration. A priority list of three essential products was agreed on for immediate action and further products nominated for consideration. (The newly formed Australian Coffee R&D Advisory Council will consider this).

2. Development of grading systems and standards

As the industry expands it is essential that objective grade standards and specifications selected by the Australian industry are compatible with existing international standards for flavour and visual quality factors. These grading systems and specifications must be understood by the industry and 'Best Practices' developed to deliver to these specifications.

3. Environmental waste management

Despite the adoption of new technology to minimise water use and effluent from processing, the industry requires environmentally sound management techniques for the waste products from processing.

4. Management and processing influences on flavour and quality

Objective cupping tests have shown significant variations in product flavour and quality emerging from different management and processing systems within the same region. Identifying the critical factors which influence flavour and quality are essential in producing consistency and are basic to the development of a quality assurance system.

5. Development of a Quality Assurance System (QAS)

Quality Assurance Systems already exist and are becoming compulsory at the roaster level. They are likely to become so at the grower level over the next few years. QAS is likely to be an industry-wide requirement regardless of the level of development of the industry. It would incorporate chemical usage and be a requirement of all industries making funding applications for research and development. A QA manual is in place for North Queensland growers, however there is a need to collect, collate and modify where necessary, information from other production areas and systems. Certification systems for roasters are already in place and are internationally recognised.

There is a need for whole-chain management of coffee quality. Even the assistant preparing the cup of coffee can have a crucial effect of consumer satisfaction. The Cup of Excellence program started by the Brazilian Specialty Coffee Association is a model which promotes and improves quality levels. It has relevance to the Australian industry.

6. Develop and implement an R&D plan for the industry

The R&D priority setting meeting formed a group called the Australian Coffee R&D Advisory Council comprising eight representatives from participating industry, research and education organisations with an independent Chair.

First task of the Council was to prepare an R&D plan for the short, medium and ongoing time frame, developed from the priority areas identified at the December 9 meeting. The R&D plan will be funded by RIRDC and managed by the Chairman of this Council.

Functions of the Australian Coffee R&D Advisory Council (ACR&DAC)

ACR&DAC is to be independent of any industry organisation. Its primary functions are to –

- provide advice to R&D funding organisations, R&D providers and the coffee industry on R&D priority issues facing the industry to assist in providing direction for proposed project work.
- identify suitable funding sources
- identify and match project areas with funding sources
- consider applications from R&D providers for R&D funding and at the request of funding organisations, offer advice on the relevance of their application in addressing industry priorities
- work with fund program managers to review the progress and outputs from research programs on an annual basis to ensure effective and efficient delivery of outcomes for the industry
- review R&D plan annually
- communicate with all sectors of the industry annually to ensure the industry's needs are kept current and focused and nominate areas of concern to the ACR&DAC

Australian Coffee R&D Advisory Council

- David Peasley – Independent Chairman
- Ian McLaughlin – ACGA (Nth Qld)
- James Drinnan – QDPI (Nth Qld)
- Steve Myers – ACIA, NSW CGA
- Andrew Ford – (NSW CCGG)
- David Forrest - (NSW TAFE)
- John Zentveld jnr – (NSW Roaster)
- Instaurator – AASCA
- Paul Frankiewicz – (SE Qld group)

Vision Statement

“By 2013, to ensure that Australia is acknowledged globally and locally, as a supplier of high quality coffee produced under world’s best practices.”

Expected Outcomes from the Five Year Plan

- Stronger industry unity.
- Registration of chemicals required for Best Practice production.
- Quality Assurance system in place including management and processing practices affecting flavour, and grade classification based on accepted international standards.
- Waste management systems identified and accepted by the EPA included in Best Practice guide for growers.
- Detailed R&D plan accepted by all sections of industry as a dynamic working plan with regular input from stakeholders.
- R&D Advisory Council active in communicating with all sections of the industry, and funding bodies ensuring R&D needs are current and focussed, R&D priorities and funding sources identified.