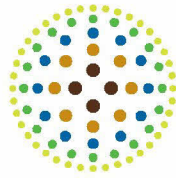




Australian Government

Rural Industries Research and
Development Corporation



RURAL INDUSTRIES

Research & Development Corporation

Australian Native Food Industry Stocktake



AUGUST 2012

RIRDC Publication No. 12/O66

© 2012 Rural Industries Research and Development Corporation.
All rights reserved.

ISBN 978-1-74254-409-0
ISSN 1440-6845

Australian Native Foods Industry Stocktake
Publication No. 12/066
Project No. PRJ-005855

The information contained in this publication is intended for general use to assist public knowledge and discussion and to help improve the development of sustainable regions. You must not rely on any information contained in this publication without taking specialist advice relevant to your particular circumstances.

While reasonable care has been taken in preparing this publication to ensure that information is true and correct, the Commonwealth of Australia gives no assurance as to the accuracy of any information in this publication.

The Commonwealth of Australia, the Rural Industries Research and Development Corporation (RIRDC), the authors or contributors expressly disclaim, to the maximum extent permitted by law, all responsibility and liability to any person, arising directly or indirectly from any act or omission, or for any consequences of any such act or omission, made in reliance on the contents of this publication, whether or not caused by any negligence on the part of the Commonwealth of Australia, RIRDC, the authors or contributors.

The Commonwealth of Australia does not necessarily endorse the views in this publication.

This publication is copyright. Apart from any use as permitted under the *Copyright Act 1968*, all other rights are reserved. However, wide dissemination is encouraged. Requests and inquiries concerning reproduction and rights should be addressed to the RIRDC Publications Manager on phone 02 6271 4165.

Researcher Contact Details

Michael Clarke
44 Barons Crescent
Hunters Hill NSW 2110

Email: Clarke@AgEconPlus.com.au

In submitting this report, the researcher has agreed to RIRDC publishing this material in its edited form.

RIRDC Contact Details

Rural Industries Research and Development Corporation
Level 2, 15 National Circuit
BARTON ACT 2600

PO Box 4776
KINGSTON ACT 2604

Phone: 02 6271 4100
Fax: 02 6271 4199
Email: rirdc@rirdc.gov.au
Web: <http://www.rirdc.gov.au>

Electronically published by RIRDC in August 2012
Print-on-demand by Union Offset Printing, Canberra at www.rirdc.gov.au
or phone 1300 634 313

Contents

- Foreword iii
- Acknowledgments..... iv
- Abbreviations..... iv
- Contents..... v
- Tables..... vi
- Figures vi
- Executive Summary..... vii
- 1. Introduction 1
- 2. Literature Review 3
- 3. Lemon Myrtle 5
- 4. Anise Myrtle..... 8
- 5. Wattleseed 11
- 6. Bush Tomato 15
- 7. Davidson Plum 20
- 8. Riberry 24
- 9. Kakadu Plum 27
- 10. Muntries 32
- 11. Lemon Aspen 35
- 12. Desert Limes..... 38
- 13. Finger Limes 42
- 14. Quandong 46
- 15. Mountain Pepper 50
- 16. Other Plants 55
- 17. Summary of Stocktake Findings 56
- 18. R&D Priorities..... 61
- 19. Implications for Industry Strategy 64
- 20. Study Conclusions 65
- Appendix 1: Survey Questionnaire..... 66
- Appendix 2: Industry Database 69
- References 75

Tables

Table 4.1: Anise myrtle average price per kilo 2011 8

Table 5.1 Farm Gate Value of Wattleseed 2010 11

Table 6.1 Bush tomato value along the supply chain 2011 16

Table 7.1 Davidson Plum Farm Gate prices 2010..... 20

Table 8.1 Estimated Farm Gate, Wholesale and Retail Value of Riberry 2010 (\$) 24

Table 12.1 Desert Lime Product Forms and Uses 38

Table 13.1 Estimated Farm Gate and Retail Value of Finger Lime 2011 42

Table 14.1 Quandong prices per kilo 2011..... 47

Table 15.1 Estimated Farm Gate and Retail Value of Mountain Pepper Products (\$)..... 51

Table 17.1 Summary of Australian Native Food Industry Stocktake Findings..... 59

Figures

Figure 6.1: Generic bush tomato and wattle seed supply chain 17

Figure 9.1 Northern Territory permit data for the commercial harvest of Kakadu Plum 1996–06..... 28

15. Mountain Pepper

Mountain pepper or native pepper (*Tasmannia lanceolata* and other species) products include both pepper leaf and berry. Mountain pepper is naturally found in wet forests and shrublands of south eastern Australia. Mountain pepper grows best in cool sheltered environments, free from water stress, in neutral well drained and fertile soil. Both berries and leaf are hot, spicy and aromatic.

Production location

Most mountain pepper production currently derives from wild-harvested stands, mostly on previously disturbed sites where the plant flourishes as an early coloniser after removal of wet forest or rainforest canopies. Several stands on previously cleared land in Tasmania and Victoria supply most of the mountain pepper product market (Read in RIRDC 2004).

Product forms and uses

Berries are used fresh, air or freeze dried and milled as a spice or flavouring. Mountain pepper berries are an alternative to 'normal' pepper. Mountain pepper leaf is used dried and milled or as an essential oil extract. It can be used as a herb, food preservative or therapeutic ingredient.

Once harvested leaves are cleaned, stored and further processed for sale. Fresh leaves on sprig are suitable as a fresh herb, a garnish or in the manufacture of pastes and purees. Milled leaf powders – finely ground and screened are a strong flavouring agent which when stored at low temperature and away from direct sunlight will retain long term pungency. Leaf flakes (passing a 3mm screen) and leaf extract are also marketed. Lanceolata extract, prepared by solvent extraction of powdered dried leaf, is added to products as diverse as olive oils and confectionary.

Fresh pepper berries are available from March until mid July and stored at 1-2°C retain freshness for several weeks. Fresh fruit is dried at 30-45 °C using warm air dryers to produce a hard, pungent 'pepper berry' – spice suitable for grinding and crushing. Dried berries may be used milled to a consistency of espresso coffee. Fragrant and spicy – the fruity aroma is matched by the heat of volatile oils. Freeze dried berries, a premium product are light, retain natural colour and shape, highly flavoured and reconstitute well.

Pepper berries can be used as a novel garnish, a pickled berry or a spicy ingredient in flour mixes, relishes, sauces, mustards, soups and stews. They are used in cooked or preserved meats, flavoured pastas, pates and cheese. Pepper berries contain a strong red dye which adds colour when included in pale sauces.

Both mountain pepper leaf and berry contain a hot-tasting terpene compound, polygodial for which a wide range of biological activity has been demonstrated, including antibacterial, anti-fungal and insect anti-feeding properties. Mountain pepper is used for its antioxidant properties in humans and as a natural veterinary remedy.

Production volume, value and variability

Volume and value

Estimates of production are difficult to determine as the present market is small and dispersed. However, it would appear that the total market, domestic and export, is approximately:

- 2.7 tonnes of dry leaf; and
- 4.0 tonnes of dried berries.

Prices received for pepper products vary widely reflecting the range of product types, volumes purchased and the specific requirements of the customer, indicative ‘farm gate’ prices include:

- Dried and milled leaf \$40-\$80/kg; and
- Fresh and dried pepper berries \$60-\$120/kg.

Higher prices are charged for export product to cover export certification costs and risk.

As a rule of thumb pepper berry is ‘marked up’ 100% between farm gate and retail supply. Pepper leaf, which may only form a very small part of a final retail product, is ‘marked up’ around 500%.

Table 15.1 Estimated Farm Gate and Retail Value of Mountain Pepper Products (\$)

	Farm Gate Value	Retail Value
Mountain pepper leaf – dried	120,000	600,000
Mountain pepper berry – dried	210,000	420,000
Total	330,000	1,020,000

In total, the industry has an estimated farm gate value of \$330,000 and a retail value, including exports of approximately \$1 million.

Variability

Production of this mainly wild harvest native food is highly variable and variation is caused by little understood interplay of seasonal conditions i.e. rainfall, temperature, frost, etc. Inventory management ensures a constant market supply.

Supply status and trends

In the early 2000s the existing small, mostly domestic market for mountain pepper products was under supplied (Robins in RIRDC 2004). Since that time, investment in harvesting, drying and milling equipment, and the identification of more potential production resource has more than outstripped market development (including export), so that, by 2011 there is an oversupply of production capacity. At this point in time there are no known plans to increase supply through either additional wild harvest or plantation production. The existing production base is able to routinely supply 10 tonnes of dry leaf and 4.0 tonnes of dried berry. With a modest increase in investment it would be possible to double this production i.e. 20 tonnes of dry leaf and 8.0 tonnes of dried berry.

Enterprise characteristics and profile

Mountain pepper production enterprises range from hobbyists with few overheads and no investment in production systems to a small number of more serious producers. Some of the more serious

producers have established small areas of plantation of up to 0.5ha or rely on natural regrowth on their own properties for a secure source of supply. Others source raw material under licence from state forestry organisations.

In most instances product is hand harvested and warm air dried. Wild harvest takes place between March and May and occurs without damage to the mountain pepper tree. Longer term, sustainable industry growth will necessitate further investment in plantations (Interviewees personal communication 2011).

No producers or product aggregators rely solely on mountain pepper to generate all of their on farm income. Larger producers may earn up to 50% of their income from mountain pepper. Mountain pepper harvesting and growing is estimated to employ between 20 and 30 individuals including enterprise owner operators.

Product supply chains and markets

The mountain pepper supply chain includes wild harvesters of leaf and berry; regrowth and small plantation operations; aggregators, manufacturers; traders; and retail. Wild harvesters include both small scale hobby operations that might collect up to 100 kg per annum to large scale wild harvesters whose yield might be up to 7 tonnes of raw material. Aggregators purchase from wild harvesters and those with regrowth or plantation. Aggregators are responsible for cleaning, drying, packing, meeting retailer quality and food standard requirements and marketing mountain pepper products. Manufacturers are part of the food industry and retailers include tourist and gourmet outlets.

An estimated 40% of pepper leaf production and 60% of pepper berry output is exported. Key markets include Germany, France and Switzerland (Interviewees personal communication 2011).

There have been major changes to market quality and safety requirements and most larger buyers of native pepper products now require some supporting analytical and microbiological data, guarantees of safe and consistent product and avoidance of pesticides in the production systems. While these changes have increased the costs of mountain pepper production and marketing they have also helped rid the trade of some unscrupulous operators and led to major increases in efficiency among the more serious producers (Interviewees personal communication 2011).

The Outback Chip Company supplies Wild Tomato & Pepper Leaf to Virgin Airlines and 7/11 Stores.

Markets and market trends

Key mountain pepper markets include:

- Domestic culinary dried – purchasing leaf and berry in milled and ground form;
- Domestic culinary fresh – smaller market purchasing fresh or frozen berries and fresh leaf;
- Food service manufacturers - use milled leaf in a range of prepared foods;
- Gift lines – retail gourmet products often packaged for the tourist industry; and
- Exports – well established markets in Europe supplying the gourmet food ingredient sector.

All of these markets are small and in aggregate they are mature. There is considerable ‘churn’ among users and some only purchase on a biannual basis. Export markets and markets supplying tourism in Australia are currently adversely affected by a strong Australian dollar.

Mountain pepper use in nutraceuticals for humans and in natural veterinary remedies is largely experimental.

Indigenous participation

There are no known Indigenous harvesters, aggregators or marketers of mountain pepper. A number of Indigenous chefs are using the product on a commercial basis. Wild harvest would appear to offer opportunity for Indigenous participation in the mountain pepper industry.

SWOT

<p>Strengths</p> <ul style="list-style-type: none"> • The mountain pepper berry is a unique native food product and taste • Good QA and food safety systems in place for most of the industry’s production provide buyers with product confidence • Established domestic and export markets. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Key: limited market development, education and awareness – dependent on the initiatives of a limited number of aggregators and traders • Production of the berry is highly variable and little is understood about the conditions or cultivation required to generate high yields • Lack of investment in managed production systems • Not all operators using best practice, some unlicensed wild harvesters • Real and nominal prices falling due to increased competition, a static market and improved production efficiency • Need improved harvesting techniques.
<p>Opportunities</p> <ul style="list-style-type: none"> • There appears to be plenty of genetic diversity in the species that would facilitate selection of improved farm lines • The mountain pepper leaf is a largely untapped resource with additional and alternative potential uses in nutritional supplement, cosmetic and food preservative applications • Mountain pepper presents opportunities for fostering irrigated cultivation • There are some (minor) income diversification opportunities for growers there appears to be a small market for the plant as an ornamental shrub and the tree is useful in land rehabilitation programs. 	<p>Threats</p> <ul style="list-style-type: none"> • Timber plantations eroding wild harvest areas • Loss of market to low cost producers in other countries, mountain pepper becomes a commodity. • Potential damage to markets by supply of poor quality, adulterated or contaminated product

Research Priorities

R&D Value

- R&D successes for the industry include export preparedness investment, food analysis, nutrient benefits, flavour descriptors and production of recipes, preliminary study of food preservative and cosmaceutical applications studies of leaf extract composition and registration of extract with FEMA GRAS (generally recognised as safe) in the US in 2011. These initiatives have created a pool of knowledge that insulates the Australian industry from potential low cost overseas suppliers. This R&D work will help prevent the product from sliding into least cost commodity status.

Future R&D Priorities

- Communication of existing research outputs including packaging information into useful forms, development of extension tools, communicating with the market. Currently market communication is done on a volunteer basis by a relative few people (while the outputs are relevant to the whole native foods industry).
- Completion of a needs analysis to identify research gaps (relevant to the whole native foods industry).
- Addressing the variability of mountain pepper production – soil nutrition, fruit set, pollination. Will be a major priority in the future as the industry moves toward plantation production. Less pressing issue at the current time when supply exceeds demand.