

1 Coffee growing industry in NSW

Coffee growing in NSW originated in 1889, and was restarted in 1982 with a small plantation at Woombah near Yamba. In the early 1990s other plantations were started, many of them being smallholdings (1-5 acres) where manual picking is employed. Currently there are some larger plantations of up to 20 ha, and these employ mechanical harvesters.

The total area planted to coffee is unknown at this stage but may be 200-300 ha, some of it not yet yielding fruit. It takes coffee trees 4 years to start bearing fruit, and 6-7 years to reach maturity and yield about 1 kg of green bean per tree.

The industry is centred around the Tweed, Richmond and Clarence River Valleys, but small coffee growing plantations have started further south in Coffs Harbour and are planned for Berri on the Shoalhaven in NSW. Australian coffee growers from northern NSW are setting up coffee plantations in Vanuatu. Coffee is now also planted in Norfolk Island.

The total area in the Northern Rivers region of NSW and southern Queensland suitable for coffee plantations based on mechanical harvesting is 2,000 ha (David Peasley). Larger scale coffee plantations are planned:

- Australian Native Foods Management Pty Ltd (ANFM) plans to plant 65 ha to coffee in the Mountain Top area near Nimbin and 155 ha to coffee in Childers near Hervey Bay, just north of Maryborough in Queensland in the next 2 years.
- Coffee Management Australia Limited (CMA) plans to develop 5 coffee projects in total, with the first one of 144 ha on the Hogarth range west of Casino to start this financial year.
- Mountain Top Enterprises plans to establish a 50 ha coffee plantation near Nimbin this year and next.

Two types of coffee bean are grown in the world: arabica and robusta. Robusta beans have a higher yield per tree and contain more caffeine and tend to be used for instant coffee. Arabica beans tend to dominate the roasted coffee market. Arabica beans are usually 50% more expensive than the robusta varieties. NSW grows only arabica beans and of those, subtropical varieties.

Coffee growing is starting in Queensland between the Glass Mountains and Bundaberg, and this is also subtropical coffee, closely related in taste and quality to northern NSW coffee.

1.1 Current industry structure in NSW

Around the world, the industry consists of 4 principal stages:

- growing,
- harvesting,
- processing to green bean,
- roasting/distribution.

Coffee is traded as green bean around the world. In Australia 3-4 large coffee brokers import green bean and sell this to the roasters. Nestle's buys up 70% of coffee around the world, and controls 70% of the market in Australia. Coffee tastes best fresh, so roasting is usually performed just prior to sale.

Coffee growing in northern NSW is small by world standards. In the large coffee growing country of Brazil plantations exceed 2,000 ha. In northern NSW, no plantation exceeds 20 ha currently. Most growers are members of the NSW Coffee Growers Association, with a paid-up membership in of 130.

The Australian Subtropical Coffee Growers Cooperative Ltd, has some 25 paid up members who pool their resources (including harvesting), purchasing and marketing of green and roasted beans. Their 1998 production of roasted bean was 1.5 t. The cooperative expects to increase its membership when its tractor driven harvester becomes available. The cooperative is closely aligned to the NSW Coffee Growers Association.

Coffee Producers Australia (CPA) is one other industry grouping of some 20 coffee growers in Northern NSW who combine the use of a self-propelled harvester and market their coffee beans essentially to one processor.

This leaves some 85 independent growers who may sell their parchment coffee to any roaster, or who may choose to roast and market their own coffee.

25% of farmers in north NSW process their cherry to 'parchment', and about 8-10 growers have polishing and hulling facilities available, processing the parchment to green bean - see **Table 1.1**).

Only very small quantities of green bean coffee from northern NSW have been sold to independent Sydney roasters. About 30 of these roasters in Sydney sell more than 10 t of coffee per year, and blend beans from all over the world. Whilst the Sydney roasters regard the coffee as good quality, they believe:

- the price is too high for blending into their existing coffee range, and
- the quantities are not large enough to warrant the development of single origin blends.

Up to the present, most coffee from northern NSW has been sold through local roasters and labels. **Table 1.1** lists 12 roasters in North NSW with their own label. These roasters compete for parchment amongst the growers, and some write forward contracts with growers. Many of these roasters are very small. The roasters individually develop their roasting and marketing techniques and exhibit their coffees at trade shows.

Table 1.1: Roasters in north NSW	
Labels	huller
Australian Estate Coffee	1
Byron Bay Coffee	
Carool Coffee	
Knockrow Ridge Coffee	1
Fernleigh's	1
Nat's Coffee	1
Summit Coffee	1
Three Valleys	
Tweed Coffee Traders	1
Tyalgum Ridge	1
Wombah Coffee	2
Zentveld's of Byron Bay	1

Of the larger plantations planned and expected to yield coffee in 2005, Australian Native Foods Management Ltd proposes to set up its own roasting facilities. Coffee Management Australia Limited proposes to sell green bean to a relatively large local roaster, Zentveld's of Byron Bay. Mountain Top Enterprises Pty Ltd proposes to market green and roasted beans.

1.2 Costs of growing arabica coffee in NSW

The costs for growing coffee separate into:

- land preparation, including possible provision of weedmats and irrigation (estimated \$12,000/ha, dependent on local conditions).
- provision of seedlings (\$1.70/tree)
- planting (\$2/tree). Trees are planted 2,200 to 3,300/ha, depending on terrain
- maintenance including spraying, fertiliser, pruning etc (\$5,000/ha/yr)
- harvesting
 - mechanical - 700 trees/hr in 2 passes at \$150/hr or 7c/kg of cherry
 - manual picking - 150 kg cherry per day @ \$120/day, or \$0.80/kg of cherry

Each tree yields 8 kg of cherry per tree, but full yields will not occur until year 5 or 6. This yield figure does not include cherry that drops onto the ground before or during harvesting. About 5.5 kg of harvested cherry make up 1 kg of parchment, after allowing for some loss of immature green cherry which is rejected.

Hulling and polishing of parchment incurs a loss of 21% in weight to green bean. So 6.6 kg of ripe cherry converts to 1 kg of green bean.

Table 1.2 sets out these costs of growing coffee estimated from industry sources and provided for in the 2 new prospectuses from Coffee Management Australia and Australian Native Foods Management. An average harvested yield of 2.3 t/ha of green bean is assumed, but this depends on season and planting.

Table 1.2 shows:

- a break-even price for coffee growing with mechanical harvesting would be \$6.45/kg, assuming a 10 year cycle (in reality trees may last 50 years, but require severe pruning after 12-13 years)
- harvesting costs are 56 c/kg for mechanical harvesting (from the above manual picking cost of \$0.80/kg of cherry and 6.6 kg of cherry, picking costs per kg of green bean are about \$5.28/kg - this may be worthwhile if the cost of bringing the harvester to the site is excessive, or if manual picking leads to a distinct improvement in harvested yield or quality)
- once the trees are established, a farmer may discount his costs for land preparation – the minimum price for harvesting green bean would be \$3.71/kg, but this would not offer a return for the use of the land
- below \$9/kg for green bean, manual picking is unprofitable
- these figures compare with \$2.3-7.5/kg landed price of green bean from some overseas countries - see **Table 2.2** below

In order to sustain the premium prices, coffee grown in northern NSW has to demonstrate significant advantages.

TABLE 1.2: INDICATIVE GROWER COSTS AND RETURNS													
From industry sources and MTC and ANFM prospectuses (assumptions are shaded)													
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	\$/kg	\$/kg
Greenbean production				1,430	2,860	2,860	2,860	2,860	2,860	2,860	18,590	Full	At the
green bean yield				1,144	2,288	2,288	2,288	2,288	2,288	2,288	14,872	recovery	margin
Revenue													
green bean				9,152	18,304	18,304	18,304	18,304	18,304	18,304	118,976	8.00	8.00
Expenses													
<i>Growing</i>													
land preparation + weedmat + irrigation + fittings + technology fee	12,000										12,000	0.81	0.00
seedlings	4,862										4,862	0.33	0.00
preparation & planting	5,720										5,720	0.38	0.00
maintenance, spraying, slashing, fertiliser, tree replacement	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	50,000	3.36	2.19
harvesting (2 passes, 4 hours each @ \$150/hr)				1,200	1,200	1,200	1,200	1,200	1,200	1,200	8,400	0.56	0.52
<i>Subtotal growing</i>	<i>27,582</i>	<i>5,000</i>	<i>5,000</i>	<i>6,200</i>	<i>6,200</i>	<i>6,200</i>	<i>6,200</i>	<i>6,200</i>	<i>6,200</i>	<i>6,200</i>	<i>80,982</i>	<i>5.45</i>	<i>2.71</i>
<i>Processing (pulp/hulling)</i>				1,144	2,288	2,288	2,288	2,288	2,288	2,288	14,872	1.00	1.00
Total expenses	27,582	5,000	5,000	7,344	8,488	8,488	8,488	8,488	8,488	8,488	95,854	6.45	3.71
Margin	-27,582	-5,000	-5,000	1,808	9,816	9,816	9,816	9,816	9,816	9,816	23,122	1.55	4.29
Assumptions													
trees / ha	2,860												
seedling cost (\$/tree)	\$1.70												
planting cost/tree (\$/tree)	\$2.00												
harvest recovery	80%												
year 4 yield	50%												
year 5 yield + onwards (kg/tree)	1												
processing costs cherry-green bean \$/kg	\$1.00												

1.3 Industry statistics

From the membership of the NSW Coffee Growers Association (130), we may conclude that the total number of growers in Northern NSW is up to 150.

Estimates of area planted to coffee vary from 200 ha to 300 ha in the region, although not all would yet bear harvest. It takes 4-6 years before the tree bears any fruit. In 1998, the weather conditions did not allow for synchronous flowering and maturing of cherry, with the result that some of the crop was not harvested. The wet weather in 1999 has delayed planting, and waterlogged some trees which may be lost.

Table 1.3 shows an estimate of the amount of coffee harvested on a yearly basis and projected to 2010. The figures require ratification by industry participants. The key features are:

- Green bean production in 1998 was some 55 t, but this was a bad year due to prolonged ripening of fruit. In the previous year there was a larger amount harvested.
- There is a current shortage of green bean in the area. Thus some green bean is imported into the area from elsewhere.
- If these shortages are maintained and labelling the coffee as grown in north NSW, is correctly implemented these shortages will allow growers to exert a positive influence on price
- The 3 large planned plantations, if successful, will yield a significant increase in roasted bean production by the year 2005 and even more beyond.
- Production in the region is expected to grow to 1,182 t/yr by 2005, and if further planned plantings proceed by CMA, probably to 2,242 t/yr by the year 2010.
- If the ha under coffee plantation are as high as some people suggest (300 ha), then not all trees yield 1 kg of green bean - this may be a point of concern for the industry and may need addressing in the industry plan
- Two roasters will account for the lion's share of the market in the year 2005

TABLE 1.3 FORWARD PROJECTIONS: COFFEE GROWN AND ROASTED IN NORTHERN RIVERS REGION

(Preliminary numbers only. They require ratification by industry members. Assumptions are shaded)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production																			
ha in cultivation (limit 2,000 ha?)	50	55	60	65	105	145	185	205	623	773	893	1,013	1,133	1,153	1,173	1,193	1,213	1,233	1,253
<i>new plantings (ha)</i>																			
CMA									144	100	100	100	100						
Australian Native Food Management									234										
Mountain Coffee Estate									20	30									
Other large new entrants?																			
Smaller plantations (include Z)		5	5	5	40	40	40	20	20	20	20	20	20	20	20	20	20	20	20
<i>total - new plantings</i>		5	5	5	40	40	40	20	418	150	120	120	120	20	20	20	20	20	20
trees in ground ('000)	125	138	150	163	263	363	463	433	1,478	1,853	2,153	2,453	2,753	2,803	2,853	2,903	2,953	3,003	3,053
of which net new trees ('000)		13	13	13	100	100	100	-30	1,045	375	300	300	300	50	50	50	50	50	50
green bean yield/tree (kg) (seasonal)	n/a	n/a	n/a	n/a	n/a	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total dry green bean (t)	n/a	n/a	n/a	n/a	n/a	100	55	120	130	210	290	370	346	1,182	1,482	1,722	1,962	2,202	2,242
Roasting/distribution (t)																			
Zentveld's							40	48	58	69	83	100	119	418	626	833	1,041	1,248	1,248
Australian Native Foods Management														486	486	486	486	486	486
Other large new entrants?																			
Wombah							12	13	15	16	18	19	21	23	26	28	31	34	38
Byron Bay							10	11	12	13	15	16	18	19	21	24	26	29	31
Others (8-12)							20	22	24	27	29	32	35	39	43	47	52	57	63
Total roasting/distribution (t)			54	60	66	74	82	94	108	125	144	167	194	986	1,201	1,418	1,635	1,854	1,866
weight loss on roasting							17	19	22	26	30	34	40	202	246	290	335	380	382
Exports of green bean from region (t)							(44)	7	(1)	59	116	169	112	(6)	35	14	(8)	(31)	(6)
Further assumptions																			
trees/ha							2,500												
harvesting recovery							80%												
initial growth in Zentveld roasting							20%												
growth in roasting by others							10%												
weight loss on roasting							17%												
Trees take # years to yield beans							5												

- the bulk of the labels are very small roasters, compared to the size of independent roasters in Sydney, and suggests some consolidation may occur
- a significant order for a continual supply of green bean from a Sydney or Melbourne roaster, or from overseas, would move prices for green bean upwards.
- CMA may export significant quantities of green bean, rather than roast the lot, and then will require development of industry wide green bean standards.

1.4 Comparison with North Queensland

Northern Queensland (Atherton Tablelands and Lakeland Downs) has 7 coffee growers with a combined production of some 150 t/yr planted over 100 ha. All the coffee is mechanically harvested. The industry has 3-4 harvesters, varying in design.

In contrast to north NSW, no major expansion of coffee plantations is planned for north Queensland, apart from an intended 20 ha increase in planting by Skybury. The area for increased coffee plantations is limited). Skybury is the biggest plantation producing some 120 t/yr of green bean most of which it exports to Japan. The other growers of north Queensland coffee roast their own coffee.

North Queensland coffee is marketed as strong flavoured and full-bodied with acidity. "The price premium for their coffee is sustainable, provided the coffee is marketed continuously". Coffee growers in North Queensland do not accept that coffee grown in north NSW is superior to their own, just different.

Coffee growers in North Queensland have their own Australian Coffee Growers Association, without any links to the NSW Coffee Growers Association.

North Queensland green bean coffee is imported into northern NSW at about \$8/kg.

2 Opportunities for growing arabica coffee in NSW

2.1 Market price and demand for arabica coffee beans in Australia

Table 2.1 shows the retail figures for instant and roast coffee in the years 1996, 1997 and 1998. Instant coffee is the largest sector consuming some 11,000 t/yr. Roasted coffee sold through retail outlets totals about 3,500 t. **Table 2.1** also shows the import and export figures for coffee (derived from ABS statistics), in the form of green bean, roasted bean and coffee extracts, the latter of which is all assumed to be instant coffee. The export figures for green bean (about 600-1,100 t) would include re-exports by coffee brokers, and are much larger than the total amount of coffee grown in Australia, which is about 200 t.

About 0.3 kg of instant coffee is derived from 1 kg of green bean. Roasting loses about 17% in weight of the green bean. After converting the roast and instant coffee to green beans, we may calculate the amount of coffee (green bean equivalent)

consumed in restaurants and cafes. **Table 2.1** shows that restaurants and coffee shops sell on average 6,700 t of coffee (green bean equivalent). Even though the figure rises sharply in **Table 2.1** from 1996 to 1998, that figure would also include changes in stock levels. The total consumption of roasted coffee in Australia is therefore 6,700 plus 4,000 t, or 10,700 t per year, measured in terms of green beans.

TABLE 2.1: MARKET FOR COFFEE IN TONNES							
	raw tonnes				green bean equivalent		
	1998	1997	1996		1998	1997	1996
Retail (Source: Retail World)							
instant coffee	11,118	11,604	11,402	0.3	37,060	38,681	38,007
roasted coffee	3,400	3,500	3,300	17%	4,096	4,095	3,861
Total	14,518	15,104	14,702		41,157	42,776	41,868
Imports (Source: ABS)							
green bean (incl. decaff.)	42,952	44,619	46,943		42,952	44,619	46,943
roasted (incl. decaff.)	2,406	2,421	2,304	17%	2,899	2,917	2,776
instant coffee	3,591	2,475	110	0.3	11,969	8,248	367
Total	48,948	49,515	49,357		57,820	55,784	50,086
Exports (Source: ABS)							
green bean (incl. decaff.)	822	1,120	668		822	1,120	668
roasted coffee	688	844	1,047	17%	829	1,017	1,261
instant coffee	1,040	1,467	1,197	0.3	3,466	4,889	3,991
Total	2,550	3,431	2,912		5,117	7,026	5,920
Coffee production Australia (Industry sources)					180	180	150
Café/Restaurant consumption of roasted coffee (derived)					11,726	6,162	2,448
	average					6,779	

Table 2.2 shows the amount of coffee consumed per person in Australia is low, compared to the rest of the world. Good potential exists for further growth in imports and in local production.

TABLE 2.2: COFFEE CONSUMPTION (kg/capita/yr)	
Source: A. Rowley (Valcorp Holdings)	
Scandinavia	12.0
Austria	10.0
Holland	9.9
Germany	7.8
France	5.9
USA	4.5
Italy	6.3
Australia	2.2

2.2 Retail / Coffee shops / Restaurant trade

Roasted coffee sells in restaurants, coffee shops and in supermarkets and specialty delicatessen shops, and **Table 2.1** shows more of the roasted coffee is consumed in the café and restaurant sector than in retail.

From the telephone directory a count shows that Australia has:

Restaurants	16,000
Cafes	7,000
Supermarkets & grocery stores	17,000

It follows that on average the amount of roasted coffee consumed in a restaurant or café is 6,700/23,000 or 291 kg/yr - just under 6 kg/wk. Individual cafes in a large suburban shopping mall consume more coffee - they target 20 kg/wk of coffee sales. The amount of roasted coffee sold per retail outlet is 3,500/17,000 t/yr, or 4 kg/wk, although large supermarkets would sell much more. These small numbers explain the marketing effort required moving coffee through retail outlets, cafes and restaurants.

The coffee roasters in Sydney indicate the market for roasted and especially specialty coffees is growing, whilst the market for instant coffee is declining.

At home many people are switching away from drinking instant coffee to percolated or plunger coffees. Woolworths states that the instant coffee market is growing at 1-2% per year whilst the roast and ground coffee is growing at the rate of 10-12% per year, but from a much lower base. Instant coffee sales represent 85% in terms of value through Woolworths. Specialty roasters in Sydney are increasing in size and number to cater for this trend.

The recent entry of Starbucks and Gloria Jeans, the two largest franchise coffee shops/retailers from USA into Australia is further evidence of the growth in the specialty coffee market.

Restaurants usually supply well known brands of coffee: Andronicus, Vittoria, Harris DE. Coffee shops often serve specialty labels. Competition amongst roasters for the coffee shop and restaurant trade is fierce with many roasters supplying coffee cups, umbrellas and the espresso machine against forward orders for their coffee. Small specialty roasters are unable to match these conditions.

There is even brisk trade in the office market. Many large corporations are installing espresso coffee machines for their staff, to save on time people would spend in the lifts going down to a street level coffee shop. These espresso machines may be purchased, or alternatively donated by a company selling single cup espresso coffee sachets for \$65/kg.

2.3 Supply and price of coffee beans from overseas

Table 2.3 shows the imports of green bean from a range of countries. These beans are both arabica (mostly for the roasted market) and robusta (mostly for the instant coffee market). Traditionally Australia imports bean from PNG, (35%). Vietnam is now the second biggest coffee supplier to Australia, followed by Indonesia, Brazil, India, Thailand, Colombia and Costa Rica. Average landed prices from those countries range from \$2.28 to \$7.51. This is significantly cheaper than Australian grown coffee which is available at \$8/kg. For Sydney roasters, it is more advantageous to roast imported coffee than to buy Australian grown coffee at double the price unless they develop special Australian blends.

It may be reasonable to suggest that in the long term local growers may capture 10% of the roasted and/or ground market in Australia. This would be equivalent to 1,000 t/yr of green bean.

The world market for coffee is some 6 million tonnes of green bean (ICO). If Australia captured just 0.1% of this market by e.g. marketing its coffee as clean and containing less caffeine, the export market would be some 6,000 t/yr. The coffee produced would most likely find markets in countries with high standards of living and concerned about cleanliness eg Japan and Germany.

Country	Value \$'000	Weight tonnes	Price \$/kg
Papua New Guinea	56,971	13,013	4.38
Viet Nam	26,241	11,534	2.28
Indonesia	15,180	6,369	2.38
Brazil	15,006	3,565	4.21
India	5,373	1,803	2.98
Thailand	3,553	1,481	2.40
Costa Rica	6,221	1,352	4.60
Colombia	6,367	1,332	4.78
Guatemala	3,036	605	5.01
Kenya	2,472	496	4.99
Ethiopia	1,803	409	4.41
Uganda	839	323	2.59
Netherlands	847	279	3.04
Peru	563	180	3.13
Mexico	801	151	5.31
Others	3,333	444	7.51
Total/average	148,606	43,335	3.43

ICO indicator prices for arabica beans in April 1999 were 103 USc/lb equivalent to \$AUS 3.38/kg. These prices move in relation to available supplies, and have been as high as 350 c/lb. It is believed the current price is a good average.

2.4 Interviews with domestic coffee bean supply companies

Interviews with Sydney roasters indicated:

- they had been approached in the past to market coffee from northern NSW
- quality of the coffee tasted is quite good, but they were unsure whether the quality was good enough to demand a price premium
- usual response was lack of altitude for the trees would affect flavour
- the quantity of north NSW coffee available is too small to develop into a brand
- most coffee shops and restaurants are price conscious and do not respond to the sales pitch "your sales will increase with this high priced coffee"
- high growth in specialty coffees
- opportunity for organic coffee
- roasters need to triple green bean coffee price to pay for processing, distribution and weight loss on roasting

2.5 External factors

Australia is seen as a disease free country, and coffee pests have not struck (yet), so that coffee grown in Australia is relatively free of pesticides. This is a marketing advantage for coffee produced here. In the same way Kona coffee produced in Hawaii (with a similar cost structure to Australia), has effectively marketed its roasted coffee into Japan, at wholesale prices up to \$40/kg (roasted), in excess of average prices of \$16-20/kg.

Coffee grown in northern NSW is fruitier than overseas coffees, has a delicate aroma, is mild and is low in caffeine content. This offers considerable marketing advantage and should help in increasing domestic and export markets.

Coffee drinking is an experience, with taste being just one component. In general, interest in tasting foods and beverages from distinct regions is increasing. Linking into the regional cuisine network may help develop additional markets.

Emphasis should also be placed on other experiential factors in coffee drinking, eg design and layout of coffee shop, personality of staff, as well as brewing techniques to accentuate the flavours of northern NSW coffee. Whilst much of this will remain in the hands of the coffee marketer, the industry as a whole has a task in raising the awareness of consumers to such an experience.

Coffee grown organically has increased market potential, but is expensive to produce. Australia with its environmental record is ideally placed to develop such a market.

Two other potential opportunities for coffee grown in northern NSW exist:

- Tourism trade - the increasing rise in tourism will mean increasing interest in things "Australian", or from the Northern Rivers of NSW. Coffee is a suitable low priced gift.
- Roasted coffee packs are ideal alternatives to chocolates, wines or flowers for bringing along to a dinner party. The opportunities for such giftware is increasing.

Packaging the coffee to maintain its freshness is essential to deliver a good experience, and appropriate labels should reinforce this experience.

2.6 Distribution of coffee beans and ground coffee (restaurants, coffee shops, retail, internet, export)

Roasted coffee is sold:

- whole bean
- ground
- various forms of packaging: gas flushed, vacuum packed, one-way seal
- fresh roasted is preferable to ground and packed coffee

Packaging is important but routine solutions are available. Ideal packaging probably requires analysis of customer needs. Freshness of roasted coffee is probably its number 1 selling point, so the time coffee sits on retailers' shelves is critical to the perception of quality.

Mail order and internet is a further marketing channel, which is growing, and allows small boutique roasters an effective means of marketing fresh specialty coffees.

2.7 Export markets

Table 2.2 indicated the coffee consumption in various countries. Japan Germany have an interest in:

- clean, disease free coffee
- organic coffee
- low-caffeine coffees.

2.8 Other strengths, and opportunities

TABLE 2.4: Australian Food Service Market	
Product Type Segmentation	
(in terms of millions of cups served per year)	
Source: BIS Shrapnel	
Capucino	301
Long Black	72
Espresso	94
Flat White	119
Café Latte	104
Iced Coffee	39
Total	729

ent products. **Table 2.4** shows

Opportunities for improving the market for coffee in Australia will depend on the supply chain including restaurants/cafes knowing how to get the best taste out of coffee and delivering it consistently in a way the customer wants. Since 7 g of coffee is used per cup, **Table 2.4** implies a market of 5,000 t/yr compared with the figure of 6,700 t derived in **section 2.1**.

3 Issues facing the development of a NSW industry

3.1 Harvesting

In north NSW the industry was started from small plots where the coffee was manually picked. Manual harvesting allows selective picking of the ripe cherry, but is prohibitively expensive with one picker picking 150 kg of cherry per 8 hour day. At a casual rate of \$120/day, this works out at some \$5.28/kg green bean.

A self-propelled mechanical harvester and a tractor driven harvester have been successfully developed and more may be put into use as the requirements grow. Costs for harvesting are of the order of \$150/hr, plus a \$100 transport charge each way which growers may share if located in proximity. About 700 trees are harvested per hour in one pass, so harvesting costs are about 50c/kg of green bean.

Mechanical harvesting incurs three problems:

- immature and overripe fruit is picked, which is removed during or after harvesting, and results in a lower yield of green bean per tree
- some cherry falls to the ground and is wasted
- if the cherry does not ripen simultaneously, more than 2 passes of mechanical harvesting may be required, or cherry may be wasted if is considered too expensive to harvest in a further pass

The cooperative which owns the designs on one of the harvesters will make available further harvesters if the need is there. This design is based on a previous South American harvester. Private groups or larger plantations may also elect to purchase their own harvester, from the cooperative, or elsewhere.

Further development of harvesters faces the following challenges:

- ability to work steeper slopes
- reduced turning circle
- ability to work tall and dwarf varieties
- possible colour sorting of cherry on the harvester
- following of mobile pulper to extract parchment from cherry

Further development would most likely use the tractor driven design of the cooperative harvester. It was previously noted that in north Queensland that a variety of harvester designs are in use.

3.2 Processing (pulping, hulling, polishing sorting, grading, roasting)

Following harvesting, the cherry is sorted and pulped during which the overripe and immature cherry are removed, the bean plus mucilage is extracted from the cherry, and the parchment beans are fermented in water with an added enzyme to remove the remaining mucilage. Traditional wet processing consumes large amounts of water: 15-20 L/kg of green bean, and water discharged is considered toxic with disposal problems. This becomes acute for larger farms. Drier methods of pulping are currently in trial. Oven drying delivers the "parchment" to a given moisture content. Sun drying is only suitable for small growers.

Beans are best stored in parchment. Hulling and polishing delivers green bean. Sieving sorts the green bean into 4 grades. Broken beans and chaff are considered undesirable by the industry:

- their appearance does not indicate top quality
- they indicate inferior processing control
- the presence of chaff leads to a greater need for afterburning in a roaster adding to environmental controls
- uniformly sized beans are preferred
- and a deep greeny blue colour indicates freshness.

Dried green bean is traded and transported to the roaster, who heats the beans in air. A temperature probe measures the bean temperature and as soon as it rises above the set temperature (about 105 C) depending on the strength or darkness of roast, the beans are ejected and air-cooled to prevent further roasting. Roasting is an art adjusted for each different batch of beans, but is slowly developing into a science.

Development of a roast to suit a particular market, eg espresso market, late, or ristretto targeted at a certain ethnic and age section of the population, is the key to success. Critical to this is a continuous guaranteed supply of beans of given quality.

Because coffee production is dependent on weather, supplies of coffee beans are not assured, and hence most roasters develop blends of coffees, which are changed according to the availability and price of supplies.

The issues facing the processor are:

- colour sorting of cherry at the processor and its impact on quality
- development and maintenance of recognised pulping fermenting and drying techniques
- development and maintenance of hulling and polishing techniques
- development and maintenance of consistent parchment and green bean standards
- development and maintenance of roasting skills to suit a particular market

Variants of many of these processing techniques are in operation in many parts of the world and may be adapted to conditions applicable in northern NSW. Because the Australian industry size is miniscule in comparison with the rest of the world, adapting these techniques is probably best solved by the whole industry, probably in conjunction with the north Queensland growers, but allowing for individual preferences by growers and/or processors.

3.3 Blending, pooling, and continuity of supply

Marketing of coffee requires careful selection of a continuous supply of consistent quality bean so that a brand may deliver a consistent quality product. In the event of a poor harvest of a traditional supply, the roasters select other beans from elsewhere to deliver the identical taste as previous batches.

A roaster advertising the source of the coffee on the label leaves himself open to the event that the harvest of that bean is poor and/or too expensive. If the roaster is to remain true to his label he cannot substitute and would lose business. Some coffees from the Northern Rivers region are marketed as Australian coffee, and thereby roasters may introduce blends from north Queensland.

A single grower with limited bean supplies is unwise to develop his own blend, and is better off pooling his coffee beans with neighbouring plantations. Thereby the amount of coffee available is increased, the quantities delivered more predictable. If quality standards are in place, the quality is assured.

Estate coffee is coffee as sourced from a single estate, and when the quality is deemed high in any one year, e.g. by winning a local agricultural award, demand soon outstrips supply, and the estate coffee supplier may be left blending or calling beans in from neighbouring farms. Small estate coffees must take special steps to ensure consistency in quality and supply of their green bean.

Importing brokers restrict themselves to dealing in minimum quantities of coffee of 1 and more usually 3 containers, or 18 t minimum, or 54 t in general.

It would seem that a minimum green coffee bean supply of one standard is 50 t. If 4 quality grades are delivered, that would mean a pooled supply of 200 t of beans. This is larger than the current production of coffee from the Northern Rivers.

3.4 Packaging, distribution, branding

Packaging of coffee is straightforward:

- cellophane bags - coffee packed in this way soon loses freshness
- vacuum packed
- gas flushed (CO₂ or N₂)
- one way seal bags allowing residual gases in the coffee to escape from the pack without letting the air in.

Packaging of coffee enjoys economies of scale. Smaller roasters may cooperate in sourcing their labels, packaging together, rather than each identifying the optimum route themselves. However in doing so they may lose their marketing edge.

Brands require separate identification of the market for targeting, and separate registration and development. Every brand needs different quality control, and, potentially, separate distribution channels.

From the point of view of the industry as a whole, a limited number of Northern Rivers brands may seem preferable to a plethora of brands each doing their own thing, but the industry should allow for new entrants who may identify and grow new markets. Smaller roasters would have relatively large distribution costs, but can provide individual customers with attention.

An important issue for roasters is to see that shelf life of roasted coffee is prolonged, and use-by-dates strictly adhered to.

The critical mass for distribution via the internet is smaller than traditional means of distribution and offers many an opportunity to set themselves up as roasters. While this technique bypasses many costs of distribution, internet coffee merchandisers may become blurred and require additional brand differentiation techniques.

3.5 Other threats and weaknesses e.g. competition

The greatest threat to small roasters, any roaster, is erratic and short supplies of quality beans at an acceptable price. In the long term the roasters may find it preferable to rely increasingly on cheaper imported varieties.

Whilst Australian grown and roasted beans may always satisfy a curiosity, in order to become an export driven industry, the industry needs to develop a case for demonstrating the superior quality of its coffee.

Hawaii promotes itself as a clean environment, free of pests. Quality control standards in Hawaii are excellent. Hawaiian coffee successfully commands a premium price in the world market.

If promoted as regional cuisine Australian coffee could suffer the vagaries of the tourist market.

4 Product definition and target markets

4.1 beans (assorted green, roasted, blended, ground)

The market for Australian coffee may be separated into 4:

Market	green bean	roasted
Domestic	roasters - independent - main roasters (50 t)	regional/gourmet cuisine tourism gifts (2-10 t)
Export	International trading - Japan - Germany - requiring "clean" coffee (>200 t)	Australiana - Harrods - Qantas - trade shows - export (50-100 t)

The figures in brackets indicate the approximate minimum quantity of bean required, to become a supplier to that market, not the total size of the market.

Organically grown and roasted coffee, which is not listed above, would have small niche markets in any country.

Any entrant into the industry would target a particular sector, depending on the size of the operation.

The smaller growers in the industry, which represents the bulk of the industry, need to decide whether to sell their coffee to small regional roasters, or to pool their beans and sell into the larger green bean market, either for servicing the domestic and/or export market.

The growth of the industry probably depends on the development of the green bean market, either domestic or export, as the market size for roasted coffee beans into the regional cuisine or trade shows is limited.

The development of the green bean market requires the smaller growers to pool their beans in the form of cherry and/or parchment, which is then pooled and processed through to green bean.

From the point of view of the development of the industry, recognised or accredited processors of cherry through to green bean are preferable. Accredited processors may control, the amount of mucilage removed during pulping/fermenting, and reduce the occurrence of immature or overripe cherry, which may dramatically affect taste.

If beans are pooled the industry will require firm standards on grades of green bean, possibly including the measurement of colour which may indicate freshness.

The quality of roasted coffee beans may be monitored through colour measurement and may indicate uniformity of roasting. Roasters of coffee need to address handling and storage techniques.

4.2 Other coffee products

Other coffee products are under development, including:

- chocolate coated roasted beans
- deserts
- candies
- specialty items, including a mixture of coffee honey
- iced coffee

The market for these products is small even compared to the small production of coffee in NSW. Any special taste of NSW grown coffee may be masked. The development of these coffee products is probably best left to the entrepreneurs in the industry.

4.3 Other services (taste panels)

The industry should rigorously administer and accredit taste panels which may agree on tasting standards. These taste panels should include recognised outsiders to the industry, probably coffee brokers and food service specialists.

These taste panels could also set directions for the correct preparation of coffee.

4.4 Distribution methods (inc. internet)

The industry could probably provide a centralised internet site for coffee growers and processors. The site may include links. This was considered less important and a longer term need at a workshop.

5 Strategies for the industry

Table 5.1 shows a SWOT analysis summarising the points made in **sections 2, 3 and 4.**

Table 5.2 shows the strategies developed by industry participants at a workshop held on 24 August 1999.

A sensitive issue is the formation of an industry body which includes all participants and caters to all members. This forms part of the strategy formulated at a workshop on 24 August, but needs ratification by all industry participants at a next meeting.

Another sensitive issue is the raising of industry levies to fund future research and marketing development. The Commonwealth government provides \$/\$ funding for an industry raised research levy up to 0.5% of farm gate receipts, provided this levy is raised nationally. This would mean including the Queensland coffee growers into the proposed industry body.

TABLE 5.1: SWOT ANALYSIS

TABLE 5.1: SWOT ANALYSIS	
Strengths	Weaknesses
Freshness	Lack of quality standards for green bean.
Coffee flavour: mild/medium	Industry fragmentation
Caffeine content: low	High green bean costs
Disease free	Small supply quantities
Close to market	Need to raise image of quality
Region is highly suitable	
Clean environment	
Opportunities	Threats
Tourism: gifts	Supply (under + over)
Domestic: growth in specialty coffees	Erratic quality or operator
Export (Qantas, tradeshow)	Weather
Internet/mail order	Adulteration
Australiana / regional cuisine	Non-synchronised maturation
"Organic"	Low price for world coffee
Interest in gourmet foods increasing	

**TABLE 5.2 NORTH NSW COFFEE GROWERS:
INDUSTRY PLAN**

VISION	Coffee grown in North NSW is a high quality world coffee, and can consistently attract significant premiums in price. The market for such coffee is unlimited.
MISSION	To exploit to the full the market potential for coffee grown in north NSW.
OBJECTIVE	To establish a thriving coffee growing, processing and marketing industry in north NSW, where ALL industry participants benefit from its success.

TABLE 5.2: COFFEE INDUSTRY: STRATEGY 1

1	Growing + nursery	To develop commercially viable coffee growing systems in north NSW producing high quality cherry
1.1	varieties	Develop accreditation scheme for recognised varieties (possible DNA testing)
1.2	site selection	Develop criteria for site selection
1.3	soil preparation	Develop/publish optimal soil preparation techniques for manual and mechanical harvesting
1.4	irrigation	Develop/publish optimal irrigation techniques for growing coffee in various locations
1.5	nutrition	Develop/publish nutrition strategies (eg to synchronise ripening of cherry) for different locations
1.6	natural production	Promote natural production techniques
1.7	other management factors	Identify management factors promoting yield of quality cherry (windbreaks, weedcontrol, drainage, frost)
1.8	quality assurance	Implement Q/A system for coffee growing (includes maintenance of diaries on irrigation, nutrition, spraying, and pre-harvest audits)
1.9	industry statistics	Maintain industry statistics on tree plantings and losses

TABLE 5.2: COFFEE INDUSTRY: STRATEGY 2

2	Harvesting	To develop commercially viable, high quality, totally integrated harvesting systems
2.1	topography	Develop manual and mechanical harvesting techniques and equipment suitable for topography of region
2.2	cooperation	Ensure access/availability/scheduling of suitable harvesters and associated equipment
2.3	sorting	Improve the maturity/quality of cherry harvested mechanically Demonstrate/publicise benefits of sorting cherry during or post harvesting
2.4	best practice	Publish optimal techniques for manual harvesting
2.5	quality assurance	Report on harvest quality
2.6	industry statistics	Collect industry statistics on tonnes of cherry produced and harvested in an industry database

TABLE 5.2 COFFEE INDUSTRY: STRATEGY 3

3	Processing	To develop commercially viable processing and handling systems to produce coffee of defined quality standards
3.1	pulping (dry, wet and variants)	Conduct quality tests (including taste) on beans from the range of pulping and fermentation techniques available, and link to costs
3.2	hulling/ polishing	Conduct taste and other quality tests on beans from the range of hulling/polishing techniques available (low priority)
3.3	equipment	Ensure access to a range of processing options to all growers
3.3	green bean quality standards	Adapt and agree on consistent green bean quality standards (international equivalent), uniform across the industry Accredit processors (includes labelling ethics)
3.4	industry statistics	Report storage stock of parchment and green bean in the industry database

TABLE 5.2: COFFEE INDUSTRY: STRATEGY 4

4	Roasting/ distribution	To encourage roasters to use coffee grown in north NSW
	roasting techniques	Roasting techniques, blending and brewing are the province of the roaster, and these are NOT a function of the industry body.
4.1	education	Raise the awareness of the consumer, the retailer and food service companies to the quality of roasting, brewing and drinking coffee.
4.2	packaging	List basic requirements for good packaging techniques and shelf life
4.3	tasting panels	Maintain and accredit internationally recognised tasting personnel/panel Promote their use, raise their profile Promote positive results of north NSW coffee
4.4	quality assurance	Regularly compare the cup quality of coffee grown in north NSW (ie plunger, filter and espresso) against accepted "standards"
4.5	branding/ labelling	Develop a north NSW coffee brand within which individual labels may operate Maintain labelling integrity

TABLE 5.2: COFFEE INDUSTRY: STRATEGY 5

5	Promotion	To widely promote coffee grown in north NSW and facilitate marketing channels
5.1	create the image	Who are we, What do we offer, How do people recognise us? Demonstrate key positive and negative attributes of coffee grown in north NSW Develop north NSW coffee brand/label (including quality requirements)
5.2	promote the image	Develop a consistent, quality presence at domestic trade shows Develop marketing links into promotional networks, eg the Regional Cuisine of the North Coast of NSW
5.3	export markets	Identify and monitor opportunities in export markets and publicise to all participants in the industry. (eg Qantas, trade shows, Harrods, etc)
5.4	disseminate market information	Monitor characteristics of different market segments (parchment, green bean, roasted bean, retail, cafes/restaurants, specialty shops) Prepare and maintain a series of leaflets on market information and channels (members only)
5.5	cooperative marketing and purchasing	Facilitate cooperative purchasing, pooling and marketing techniques Investigate means of encouraging growers to guarantee a minimum supply to the cooperative

TABLE 5.2: COFFEE INDUSTRY: STRATEGY 6

6	Industry body	To form a peak industry body embracing everyone growing, harvesting, processing, roasting and marketing coffee from north NSW, and accommodating individual differences
6.1	public relations	Represent the industry publicly Lobby government departments and industry
6.2	coordination	Plan and implement strategies 1-5 - appoint chairman acceptable to all industry members - elect committees to administer the strategies above. - subcommittees, drawn from both the industry or outsiders
6.3	field officers	Maintain voluntary industry field officers in Newrybar, Rosebank, Alstonville, Shannon, Casino, Tweed Heads, McLeans Ridge (Lismore), Mullumbimby, Yamba, who report on crop quality, yields and planned plantings and put into database. Link to strategies 1.9, 2.5, 2.6, 3.4. 4.5
6.4	pooling	Facilitate implementation of pooling schemes for: cherry, parchment, green bean, marketing - probably through existing cooperative
6.5	education /training	Set up links with training institutions Conduct workshops and seminars on a regular basis Maintain and regularly distribute a series of newsletters and information sheets
6.6	Funding	Set and raise levies for the industry Administer funds for the industry Access private and government funding Administer industry r & d projects

6 Recommendations

6.1 Viability of proposed industry

The marginal cost of growing coffee in northern NSW (ie neglecting setup costs) is about \$3.71/kg of green bean which is no more than the average price of imported coffee beans, it is concluded that the region has good prospects for becoming a significant coffee growing.

Since only 2.2 kg of coffee is consumed per person in Australia, compared with much larger quantities elsewhere, the potential for growth of the industry in Australia is large:

- leading to import substitution
- exports are also a distinct possibility

Australian coffee can consistently maintain a price premium over imported coffee, because of the increasing interest in consuming and experiencing a locally grown, relatively pest free coffee.

In the medium term (the next 10 years) the industry will grow and at least partly roast 1,200 t/yr of coffee. In the longer term the industry size may grow to process some 5,000 t of bean (2.5 t/ha and 2,000 t available). This would equal \$40 million in green bean sales, and \$120 million in roasted bean sales. Such activity will also generate increasing interest in specialty coffee shops selling this product, which represents further value adding.

If the price for green bean is maintained at \$8/kg minimum, the growing of coffee will remain profitable, and increasing numbers of growers will enter the industry. At a price of \$8/kg, roasters will wholesale roasted bean or ground coffee for \$26/kg. Even with small volumes < 10 t /yr a roaster can expect to make a reasonable profit.

6.2 Marketing of coffee beans and products

The price premium can only be maintained and indeed improved by maintaining strict quality standards for the supply of green bean.

The larger estates may act to establish their own standards and procedures. But by sharing with the rest of the industry members, the larger estates may:

- increase their potential supplies when demand for their green bean exceeds their own supply
- minimise any damage to their own marketing techniques from irresponsible actions by other growers and processors

By adhering to strict quality standards the smaller growers will ensure a continuing and improving market for their product.

Smaller growers in particular will be able to command a better price if they pool their beans at standard qualities providing bigger incentive for the roasters to develop specific blends. Bigger lots should command better prices.

Quality standards enable the industry to safeguard against the recurring risks of variations in supply and demand.

It is recommended that the industry develop a marketing and promotion campaign for coffee grown in the region so that prices for green bean are maintained or improved. Such a program could be centred around the development of a Northern Rivers coffee label, within which brands could be individually promoted by industry participants.

6.3 Operations strategy (purchasing, scheduling of harvest)

An industry body (below) may identify areas of need for the industry in terms of:

- monitoring of coffee plantations and cherry and parchment production
- identifying areas of need - eg the scheduling of harvesters, or processing equipment, or training areas, and especially in promoting a Northern Rivers coffee taste.
- Adopting and implementing the strategic plan along the lines devised in **section 5**.

6.4 Quality assurance

It is recommended that:

- the industry set up a committee to adapt the Specialty Coffee Association of America's green bean coffee standards.
- the industry set up a committee to administer and control a strict taste panel which would benchmark cup quality of Australian grown coffee
- the industry develop and maintain labelling standards

6.5 Research & development (growing, harvesting, processing, packaging)

It is recommended the industry conduct research into the following areas, listed in order of priority:

- cultivation methods to achieve synchronous ripening
- improvements to green bean quality standards and their implementation

6.6 Establishment of industry association

It is recommended that a peak industry be formed which encompasses all players in the industry, with no one excluded from the organisation.

The industry body would have 2 representatives each from:

- Growers
- Harvesters
- Processors
- Roasters
- Marketers

An independent person from outside the coffee industry would chair the industry association. Committees would be established for each of the strategies developed in **chapter 5**.

6.7 Industry finances

The industry should levy funds:

- 10 c/seedling
- 5 c/kg green bean
- 30 c/kg of roasted coffee

These funds should be applied to:

- administration by the industry body
- marketing and promotion of the region's coffee
- the maintenance of green bean quality standards
- the maintenance of industry statistics, quality standards
- dissemination of information to all industry participants

Table 6.1 shows a preliminary funding/expenses sheet for the proposed industry association.

6.8 Timing

The setting up of the industry body needs ratification by all industry members, and consideration should be given to the inclusion of the North Queensland growers.

Consultation with everyone, the election of representatives and acceptance of a constitution together with the interaction of the current industry groupings may take 6 - 12 months.

It is
new
date

TABLE 6.1: FUNDING AND EXPENSES FOR PROPOSED INDUSTRY BODY							
		2000	2001	2002	2003	2004	2005
Revenue (\$'000)							
<i>Industry levies (\$'000)</i>							
Seedlings (less stumpings)	0.1	105	38	30	30	30	5
Green bean produced	0.1	13	21	29	37	35	118
Roasting	0.3	33	38	43	50	58	296
<i>Total levies</i>		<i>150</i>	<i>96</i>	<i>102</i>	<i>117</i>	<i>123</i>	<i>419</i>
Government matching up to 0.5% of farm gate value		14	12	14	17	16	48
Revenue - peak body		164	108	116	135	139	467
Expenses (\$'000)							
	yearly						
Secretariat (p/t) + overheads	20						
Field days	15						
r & d	50						
industry promotion	50						
Overheads	10						
Total expenses		145	145	145	145	145	145
Reserves		19	-18	-47	-57	-63	258