



RURAL INDUSTRIES RESEARCH
& DEVELOPMENT CORPORATION

An Introduction to Herb Growing

**A report for the Rural Industries Research
and Development Corporation**

by Howard Rubin & Elle Fikke-Rubin

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Researcher Contact Details

Howard Rubin & Elie Fikke-Rubin
Herb Farms Australia
PO Box 6099
SOUTH LISMORE NSW 2480

Phone/fax: 02 6629 1057
Email: herbs@om.com.au

RIRDC Contact Details

Rural Industries Research and Development Corporation
Level 1, AMA House
42 Macquarie Street
BARTON ACT 2600
PO Box 4776
KINGSTON ACT 2604

Phone: 02 6272 4539
Fax: 02 6272 5877
Email: rirdc@netinfo.com.au
Website: <http://www.rirdc.gov.au>



Rosemary
Rosmarinus officinalis

FOREWORD

Australia imports most of its herb requirements, both culinary and medicinal. In 1997 the dried culinary herb market was worth \$18 million, while dried medicinal herbs was \$14 million, of which more than half was imported.

As the herb industry grows, herbal companies will increasingly start buying in local herbs and change their manufacturing processes to overcome hygiene and freshness problems.

This report provides a background on herbs in Australia, and gives a general overview of herb growing. It also discusses potential growers' prospects in the industry, export markets, set up costs, marketing, harvesting, drying and selecting the right herbs to grow.

The report forms part of RIRDC's new plant products R&D program, which aims to facilitate the development of new industries based on plants or plant products that have commercial potential in Australia.

Peter Core
Managing Director
Rural Industries Research and Development Corporation

About the Authors

Howard Rubin and his wife Elle Fikke-Rubin came to Australia in 1987, with the intention of further developing their herb business which they had started in the UK years before. They had managed a herb farm and herbal tea business in Wales but decided, after the Chernobyl disaster caused their area to be contaminated with nuclear fall out, to relocate to Australia where, to their surprise, they found that the concept of herb growing was completely new to gardeners and farmers alike.

As they needed good quality herbs for their herb business, they decided to start training interested growers in their area (Northern NSW), rather than attempt to grow all the herbs themselves. Their philosophy that one 100-acre herb farm doesn't make a herb industry, but a hundred 1-acre farms do, has seen that industry now well established and expanding at a healthy and sustainable rate.

Elle studied horticulture, herbalism and naturopathy in her native country, the Netherlands. She has been growing and using herbs for over 25 years.

Howard has degrees in business (City College of New York) and homoeopathy.

Together they have travelled extensively, exchanging their knowledge and experience in growing and using herbs with like minded people in many countries.

In 1987 they founded The Organic Herb Growers of Australia Inc. (OHGA), which has become the national industry body for herb growers. To date it has about 500 members nationally. OHGA is one of the five AQIS approved organic certification organisations. Howard has been the President of OHGA for many years, while Elle is the Editor of the organisation's bi-monthly magazine "The Herb Grower".

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Ginseng
Panax ginseng

PREFACE

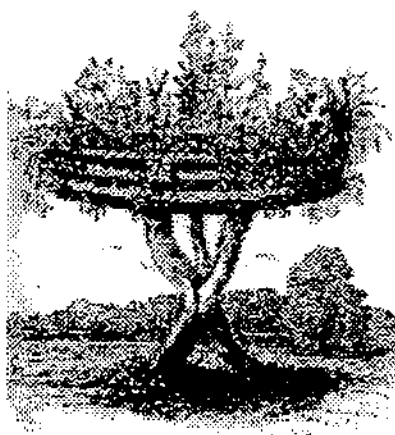
So you're thinking of going into herbs?

This booklet is designed to give you the background on herbs in Australia, a rough idea of what herb growing is all about, and your prospects in the industry, should you decide to go through with it.

The interest in herbs has increased a lot over the last couple of years, both in growing and in usage. This is not surprising, as herbs are the most versatile of plants and the range of usable herbs is enormous. Since the beginning of time herbs have been used for cooking and drinking, for health and cosmetics, for weaving and dyeing, in perfumes for pleasure and as essential tools in religious rituals. They have formed an integral part of every facet of daily life.

As our lives threaten to become more 'chemicalised' and 'synthesised', there is a growing concern that it may all get out of hand. Many people yearn for a better lifestyle, one with more quality to it, and the growing and using of herbs has become part of that lifestyle.

Growing herbs is indeed a nice way to earn a living. There are herbs suited to every climate, to every soil, to every grower. Finding the ideal herbs for you, your farm or your garden will involve trial and error, and it will be hard work. You'll do well to ignore all the rumours of fantastic prices that are being paid for certain herbs, as they are just that: rumours. Herb growing will not make you rich overnight, or any time for that matter. You will, however, get a fair price for a good crop, and a good crop of herbs will give you a better return than most of the stable crops. For most herb growers, though, it does more than that. Herb growing also adds to their quality of life.



INTRODUCTION



St. John's Wort

*Hypericum
perforatum*

*Externally applied
for burns, bruises,
deep wounds,
sciatica, sprains,
nerve damage.
Anti-depressant,
used in drug trials
for AIDS.*

European herbs arrived in Australia as long ago as the first settlers, who brought with them those plants which were in extensive use back home and which they considered to be an essential part of daily life. All of them were used as medicinals, even the herbs we now use strictly for cooking or as a garnish.

As most herbs originated in the wild, with only a very few especially cultivated, once brought to Australia they escaped back into nature. They just love the climate here and some of them quickly cover paddocks.

Hypericum (St. John's wort) is an example of a herb which has gone wild, and as it threatens cattle with its induced photosensitivity it was declared a noxious weed. The irony is that the properties of St. John's wort as an anti-depressant have been re-discovered by the pharmaceutical companies, and it has become in such great demand that there is now a world shortage of it! A farmer could make a greater profit harvesting the St. John's wort covering his paddocks than he could by raising and selling his cattle, yet until very recently most farmers have completely overlooked the potential of growing herbs.

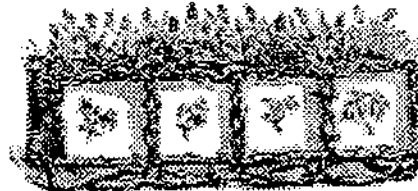
AUSTRALIA IMPORTS THE BULK OF ITS HERBS

Australia imports most of its herb requirements, both on the culinary and the medicinal side. Yearly, bulk dried herbs worth about \$30 million are imported. In 1997, the market for dried medicinal herbs was worth about \$14 million, of which more than half was imported. About \$18 million worth of dried culinary herbs are used in Australia every year. Most of these herbs are imported.

As these herbs come in from Eastern Europe, North Africa, China, India, Mexico and other third world countries, manufacturers are well aware of the problems that are attached to this material. Not only is it often grown and dried under very unhygienic circumstances, and therefore has to be chemically cleaned, but it is seldom fresh after storage in warehouses, being shipped around the globe, fumigated at customs etc. Many herbal companies, for that reason, import already half manufactured products, such as resins and extracts.

As the herb industry grows, and more herbal produce becomes available in Australia, these companies will start buying in local herbs and changing their manufacturing processes. All they need to switch over is a guarantee of supply and quality, as well as a reasonable price.

If herb growers can deliver, the companies will buy.



THE EXPORT MARKET

The export potential, especially for medicinal herbs, is enormous. Australia is seen as a "green, clean country" and herbal and pharmaceutical companies overseas would like nothing better than to be able to substitute quality herbs for the poor raw material they get from the third world.

A recent development on the world market is that most buyers now want organically grown herbs, which have been certified by one of the certification bodies in Australia. Countries like Japan and the USA will only buy "certified organic", which has become a measure of quality. And they are willing to pay a premium price.



WHAT'S IN IT FOR GROWERS?

The average price of dried herbs is \$5 - \$20 / kg, with some exceptions below and above this range. If your produce is certified organic, you can expect a premium of 10-20%.

An average harvest is 1 tonne of dried herb per acre per year. This figure will go up with rootcrops and will be only slightly less when just the leaf is harvested. If we take the low figure of \$5 in the price range, you will see that the proceeds from an acre still add up to \$5,000 and this is the minimum figure. Compare this to other farm crops such as wheat, carrots or peas, or indeed cattle, and you'll wonder why herbs are not one of Australia's main crops.

THERE ARE A COUPLE OF PROBLEMS WITH HERB GROWING

- herb farming is more labour intensive than other other crops.

It requires, however, much less capital input, as most herbs are perennials and can be harvested for several years, without replanting.

- there is strong competition on price from the Third World.

But world prices on herbs, as well as shipping prices, are steadily rising. Some countries, like India, are now looking into processing their herbs, rather than bulk exporting them. They are even proposing legislation in that regard.

- herbal companies have not been very interested in Australian-grown herbs.

This has been a real problem in the past. Fortunately the interest in herbal medicine has grown enormously, and the herbal companies with it. Until recently herb growing in Australia was so limited, that a continuous supply of quality herbs could not be guaranteed. Rather than upsetting the relationship with their herbal importers, the manufacturers kept using the admittedly far inferior imported herbs. All herbal manufacturers are now committed to buying Australian grown herbs, especially if they have been grown organically.

- little research was done in the field of herb growing and there was no support for herb farmers.

This has been a big stumbling block. Now, however, the Government has recognised that the demand for quality herbs has grown to such an extent, both in Australia and the rest of the world, that herbs can become one of the more profitable crops for the Australian farmer.

HOW MUCH MONEY IS THERE TO BE MADE WITH HERBS?

This is the question everyone wants answered before they want to know anything else about herb growing. And it's also the most difficult one to answer, as there are as many answers as there are growers and farmers. It all depends on your acreage, on the work you're prepared to put in, on the facilities you already have or may need to establish, and whether you are an organic or a conventional grower.

We will work out a few different budgets for different kinds of set-ups.

CULINARY HERBS

1. A budget for a one acre culinary herb farm, herbs sold on the fresh markets

One acre will yield 4000 kg of fresh herbs annually.

These herbs will be bunched into 100 g bunches, which will bring in 60 cents a bunch*.



Lavender

Lavandula spp.

The lavenders yield essential oils which are used for many purposes: cleaning, insect repelling, perfume, and many medicinal applications such as wound dressing, muscular pains, neuralgia and insect bites.

Lavender oil has become an important export item of Tasmania

4,000 kg @ 100 g = 40,000 bunches
40,000 bunches x 60 cents = \$24,000

Direct costs:

Packaging (say 10%)	\$2,400
Freight to the market (say 8%)	\$1,920
Agent's commission (min. 10%)	\$2,400
misc. costs	\$ 40
	<u>\$6,760</u>

Gross Profit \$17,240

* Certified organic growers can expect a 10-20% premium

Indirect costs:

These can only be established by yourself and are:

Petrol from farm to dispatch point (transport company)	\$????
Labour costs if you're employing someone	\$????

NB: One experienced person will cut 50 bunches per hour.

Therefore 40,000 bunches will take 800 hours to harvest.

Set up costs (first year)

Cultivation - 8 hours @ \$25 =	\$200
Seeds for 200 beds @ \$2.50 =	\$500
Mulch - 100 bales @ \$2.50 =	\$250
Irrigation	\$500
Coolroom, minimum	\$400
Soil improvements	\$120
Hand tools minimum	\$260
Organic certification, if applicable	<u>\$250</u>
	\$ 2,480

2. A budget for a 10 acre culinary herb farm, herbs sold dried

Most leafy herbs dry down at the ratio of 5 kg fresh to 1 kg dried. As dried culinary herbs have a much lower monetary value than medicinals, it would not be worthwhile going into the dried market on a one acre farm.

The following budget is worked out using 10 acres.

10 acres = 40,000 kg fresh herbs.

Working on the ratio of 5:1, 10 acres will yield 8,000 kg dried herbs.

8,000 kg x \$10 (average wholesale price) =		\$80,000
Normal agricultural costs	\$ 2,500	
Processing costs: harvesting, drying, milling	<u>\$20,000</u>	<u>\$22,500</u>
		Gross Profit \$57,500
<i>less labour charge (if applicable)</i>		
<i>less set up costs and capital equipment</i>		

MEDICINAL HERBS

Medicinal herbs are usually sold in dried form, as the manufacturers want to be able to store them until needed. Prices for these dried medicinal herbs vary from \$10 - \$20/kg, with a very few attracting higher prices. Some farmers intend to go for the high priced ones only, not realising that there are reasons why these herbs fetch the high price, and these can be:

- the herb can only be grown in certain regions.

Arnica, for instance, needs alpine woods and meadows.

- it takes a long time before the herb can be harvested.

Ginseng is one of the herbs that take from five to seven years before they'll bring you any return.

- the herb is difficult to grow.

Goldenseal, which can fetch up to \$250/kg, is one of these herbs that have a high failure rate. Add to that the cost of buying the rootstock and the fact that it takes years before you can harvest it, and you'll be lucky to make any profit at all.

To give you an idea about the financial viability of growing herbs, we'll look at three commonly grown and marketed medicinal herbs. Please bear in mind that these figures can only be approximate, as the price a herb will fetch fluctuates with availability and quality. The figures we'll use are very conservative, in both the prices and the yields. You may be such a good grower, and your soil in such good condition that your yields are higher.



**Echinacea
purpurea**

The species of Echinacea which is easiest to grow. Even though it will grow almost everywhere in Australia, the climate and soil will determine the active ingredients the herbal manufacturers are looking for.

Used for all sorts of skin diseases, colds and flu and any condition that requires strengthening of the immune system.

a) Echinacea purpurea

This herb takes around 15 - 18 months from planting to harvesting. Commonly the whole herb is harvested and dried, but sometimes the manufacturer wants only the aerial parts. Our estimate is based on whole plants.

1 acre = 20,000 plants, which will yield 8,000 kg fresh weight.

wet : dry ratio = 5 : 1

1 acre will produce 1,600 kg dried Echinacea.

1,600 x \$12 = \$19,200

Seedling costs - 20,000 @ 10 cents \$2,000

Freight costs - 10 pallets @ \$80 \$ 800

Normal agricultural costs \$2,500

\$5,300

Gross Profit \$13,900

less labour charge (if applicable)

less set up costs, and capital equipment (dryer & mill)

b) Valerian root

This is a 12 month crop.

The root and rootlets are the parts of the plant which are harvested and dried.

1 acre = 10,000 plants, which will produce 2,100 kg of fresh roots

wet : dry ratio = 3 : 1

1 acre will yield 700 kgs of dried Valerian root.

700 x \$15 = \$10,500

Seedling costs - 10,000 @ 10 cents \$1,000

Freight costs - 3 pallets @ \$80 \$ 240

Normal agricultural costs \$2,500

\$3,740

Gross Profit \$ 6,760

less labour charge (if applicable)

less set up costs and capital equipment

c) Lemon balm

Harvesting of lemon balm can start about 6 months after planting. Only the aerial parts are cut and dried. The plants can be harvested several times a year, depending on your climate.

1 acre = 8,000 plants, which will produce approximately 8,000 kg fresh herb.

Ratio wet : dry = 8 : 1

1 acre will yield approximately 1,000 kg dry herb per year.

1,000 x \$12 = \$12,000

Seedling costs - 8,000 @ 10 cents \$ 800

Freight costs - 4 pallets @ \$80 \$ 320

Normal agricultural costs \$2,500

\$3,620

Gross Profit \$ 6,380

less labour charge (if applicable)

less set up costs and capital equipment

SET UP COSTS

Before you can plant your herbs, whether it's on a small or larger scale, and irregardless of whether they're culinaries or medicinals, you will most likely have the following costs, unless you already have your own machinery, plant propagation set up, tools etc. You may also want to grow without compost, mulch or other soil improvers if your soil is really good.

a) Tractor work

\$25/h for a tractor - one acre will need 8-10 h of tractor work.

b) Lime or dolomite

To bring the pH up in acid soils. The best pH for herbs is 6.0 - 6.5.

c) Gypsum

If your soil is mainly a hard clay.

d) Compost

You may not need it. For those who do, you would need a minimum of 5 cubic metres per acre, which will give you enough compost to plant the seedlings in. A far cheaper way is to grow a green manure (legumes) crop, which will be ploughed in after 6-8 weeks and which will add nitrogen to your soil and improve its structure.

e) Soil improver or fertiliser

Most herbs, especially the rootcrops, are not too keen on fertilisers. Herbs much prefer a reasonably good soil, in which they can search out nutrients. This process also increases their flavour and their active ingredients. Most wild herbs grow on quite poor soil and a bit of stress produces the best plants. Some slow release fertiliser, though, can be applied and dug into the beds or rows prior to planting.

f) Mulch

Mulch will stop weeds, hold moisture, keep the soil at an even temperature, attract earthworms and improve the soil as it breaks down. Some good mulch materials are lucerne hay, soya bean stubble and straw. You may find a source of other materials in your area, like a spent mushroom growing medium, tea tree mulch etc.

g) Irrigation

Fortunately there are herbs to suit every situation. If your farm is in a dry area, you will naturally not attempt to grow herbs that need a lot of water. However, in the seed or seedling stage, and after a prolonged dry spell, all herbs will need to be irrigated in whichever way suits you best.

h) Seeds or seedlings

It's your decision whether you start with seeds or seedlings. Seeds for an acre will cost about \$300-\$500; seedlings at 10c per seedling would come to about \$2,400.

i) Hand tools

The basic tools you will need are:

- | | | |
|---------------|------------|-------------|
| * wheelbarrow | * spade(s) | * fork(s) |
| * rake(s) | * hoe | * secateurs |



Comfrey

Symphytum officinale

Comfrey is one of the best 'liquid manure' plants, as it is high in potassium and phosphorus, as well as other minerals.

Just steep the leaves in water for a couple of weeks, dilute by ten parts of water and spray on your crop.

You can also dig the leaves into your beds or use them as mulch.

Added to the compost heap, it acts as an activator.

j) Cold storage for fresh herbs

This will be as small or as big as the size of your harvests. For most beginners a good sized second hand refrigerator will do. As your farm and business grow, you may want to expand to a small coolroom.

k) Drying and milling facilities for dried herbs

A professional drying set up will cost you about \$9,000 and up. The cost is difficult to fix, as your drying facilities will match the size of your operation. A one-acre property from which you want to constantly harvest and dry, will need a 20 ft container, which will hold about 500-1000 kg fresh herbs, depending on the variety you're drying.

A simple mill will cost about \$1,200 while a state of the art machine can cost up to \$40,000. There are many variables in between, and of course the mill you'll use will also depend on the way your customers want their herbs cut. Most domestic herb buyers accept a rough cut because they will further refine the herbs in their own facilities, to suit their own particular production. Just bear in mind that the more you're able to deliver to their specifications, the higher your price will be.

l) Organic certification

Those of you who want to grow for the organic market will need to become certified. The certification body which specialises in herbs is The Organic Herb Growers of Australia Inc. The yearly cost of membership and certification is around \$250. Inspection travel costs come on top of that and depend on how far the local inspector has to travel.

MARKETING

CULINARY HERBS

Domestic market

The market for fresh culinary herbs has been steadily increasing, but so has the number of new growers. Recent summers have seen an oversupply of fresh herbs and the prices have fallen dramatically. Winter crops still bring in a good price.

Small sales can be made on a local level, to restaurants, greengrocers and food processors. Wholesaling is done via the capital city markets and specialist herb suppliers, as well as large food processors.

The dried culinary herb market, both domestic and export, offers greater potential. Producers of certified organic herbs will have no problems selling them, in whatever quantity. Small growers can dry their herbs as they go along, and stockpile them until they have a large enough quantity (min. 5 kg) to sell to a gourmet or healthfood shop. They can expect \$10-\$20/kg.

Going into this market on a large scale, buyers will be importers, food processors, re-packers. If you want to become a regular supplier, you have to be able to deliver them 100 kg and up, to the buyers' specifications, on a regular basis. Prices will vary from \$2-\$10/kg, with the higher price for certified organic herbs.

Value adding

There are of course other ways to market your herbs. You can make a product, which can be as simple as packing your dried herbs in a sachet or jar with your own brand name on it. You can make herbed oil and vinegar, pesto or sauce, herbed honey and potpourri. You can sell your herbs growing in pots.

A risk in selling value added products, if you can call it that, is that if your product becomes too successful, you may not be able to fill the demand and may not have enough capital to expand. This is a problem that quite a few people have experienced.

There are also government regulations for food production. As long as you're working from your home, there is not much government interference, but once you outgrow your kitchen, it becomes a different story. You will need to conform to food regulations and will have inspectors coming to take a look at your operation.

Export market

The export market for herbs, both culinary and medicinal, is more difficult to access than the domestic market. Export requires capital and an export marketing plan, and the know-how to achieve this kind of success. It is not for the average farmer. However, there are a great many new opportunities opening up for the export of certified organic Australian herbs.

MEDICINAL HERBS

Domestic market

Medicinal herbs are marketed in dried form. The exception could be a herbalist in your area who makes her/his own tinctures or ointments, and who you could supply with small quantities of fresh medicinals. In general you will have to dry the herbs. Again, for small growers, there is a possible outlet in healthfood shops, where sometimes large jars with loose dried medicinal herbs are displayed, which they weigh off for their customers. In small quantities certified organic herbs will sell for \$15-\$25/kg.



Chamomile

Matricaria spp.

This is one of the most popular and widely traded herbs in the world.

It is used as an essential oil and in liquid extracts, but above all its dried flowers are used in herbal teas.

As well as being healthy for the whole family including teething babies, the tea is also very useful to prevent damping off disease in seedlings.

Chamomile will grow well in Australia and there is a good market for it.

There are about a dozen processors of medicinal herbs in Australia. The annual market for Australian medicinal herbs is approximately \$16 million at farm gate, which is quite small compared to the world markets of the USA at \$1.5 billion, and Germany at \$3 billion. It makes for a limited domestic market, but it is a good start for the Australian farmer who wants to experiment with herb crops, with a view to expanding after trials are done.

When approached, most herb companies will send you a list of their requirements: quantity of herb, moisture content of dried herb, if and how the herb should be cut or milled. Some will even tell you the prices they are prepared to pay, although the final price will depend on the quality of your product.

Value adding

Because of the Therapeutic Goods Act (TGA) it will be near impossible to make your own herbal medicines.

Export

Australia still has a reputation as a clean environment. The export potential of good quality organic medicinal herbs is enormous, but this can only be realised by large broad acre farms or co-operatives pooling their produce. The world market place talks in terms of 20 ft containers (FCL), which hold approximately 20 tonnes of herbs. To achieve this is beyond the scope of small growers.

HOW TO GET STARTED

The key to a successful herb enterprise is planning. Once you've decided to become a herb grower, you should start collecting as much information as you can. Join a herb growing organisation, write away for seed catalogues, invest in herbal books (see recommended reading list in the back) and try to visit already established herb farms. Also price materials locally, obtain freight costs from your local freight company and prepare your own budget.

Whether you intend to grow culinaries or medicinals, in a garden plot or on big acreage, you should start by planting trial crops. Choose a minimum of ten varieties of herbs, and read up on them before you attempt to grow them.

If you plan on a small culinary herb garden from which you'll be regularly harvesting fresh cut herbs for market, you might consider keeping the plot as close as possible to your home for ease of watering, weeding and harvesting. Herbs grown for the dried culinary and medicinal market can be planted further away, as they will only be harvested several times a year.

Start off by getting familiar with the area you've chosen

Observe where the sun is during different times of the day.

Is there shade anywhere at any time?

Is it windy and do you need a windbreak?

Where and how does rainwater run?

Would you need to put in drains?



Burdock
Arctium lappa

Soil preparation

You will need to do several soil tests in your selected growing area:

- a chemical residue test;
- a pH test: herbs prefer a pH of 6.0 to 6.5. Add dolomite or lime to the soil if it comes up too acidic.
- a soil nutrient test;
- a water drainage test, which is easily done by digging a small hole and filling it up with water. If the water drains away immediately, you will have to add compost to your soil to hold the water longer. Should the water still sit in your hole after 15 minutes, your herbs will have problems with waterlogging. You will need to incorporate gypsum into your soil, and raise your beds to a minimum of 30 cm. The soil will also be much improved by adding compost.



When digging your land, be it by hand or by machinery, make sure that you don't bury your valuable topsoil.

Beds

For a small fresh culinaries grower, a good bed size is one metre wide by ten metres long. Harvesting and weeding can be done from both sides of the beds, and the length is not too great to walk around.

If your intention is to machine-harvest, you will naturally adjust the size of the beds/rows to suit the machinery and your land.

As most herbs don't like to have wet feet for long periods, beds/rows for all types of herb farming should be a minimum of 20-25 cm high.

Seeds or seedlings?

Seeds are, of course, much cheaper and at the right time of the year anyone will have reasonable success with them. Many herbs can be sown straight into the beds. You'll have no problems with coriander, parsley, dill, fennel, mint, lemon-balm, burdock, echinacea, chamomile and others, if you sow them in early spring.

However, because of weed problems, many herb growers start seeds off in seedraising trays or contract a nursery to grow their seedlings for them. Planting seedlings and mulching them immediately gives the herbs a good start on any weeds.

Weed control

Weeds will always your biggest problem. Planting through paper, cardboard or weedmat, and mulching, will give your seedlings a head start on the weeds, but you should count on having to check on weeds at least once a month.

HARVESTING

Harvesting for the fresh market

It's important to set up your farm correctly for the end market which you will be pursuing. If you have sown or planted at the right time of year, your crops will be ready for their first harvest within three months to one year, depending on the crop.

If your plan is to grow for the fresh culinary market, you'll be harvesting at least twice a week. You'll be getting up at the crack of dawn, cutting your herbs, washing them and putting them in cold storage ready to be taken to your customers or a transport depot.

Timing is the key to the fresh herb market. Your herbs must appear in the marketplace as fresh as if they were just cut, even though they may have to travel for up to two days by road or plane to their destination. You must reduce the field temperature as quickly as possible, and maintain an even temperature thereafter. The optimum temperature is from 2^o to 6^oC, depending on the variety of herb.

To get the timing right, calculate backwards from the time the trucks leave your depot. One person can comfortably harvest 50 bunches in an hour. The cut herbs must be washed, drained and cooled down for a minimum of two hours before being taken to the transport depot.

Some harvesting rules

- * For harvesting only sharp and clean secateurs must be used.
- * Herbs with small leaves (e.g. thyme, oregano) must be harvested first. The larger-leaved the herb is, the less amount of time it should spend in the coolroom. The softer the leaves are, the higher the temperature (in the 2^o-6^oC range) at which they should be kept. It follows then that you will harvest herbs like thyme first and a herb like sweet basil last, at which time you will adjust the refrigerating temperature.
- * Reject all poor quality leaf.
- * A bunch of herbs should look as good as a bouquet of flowers which you'd give your best friend. It should be perfectly formed, with all stems the same length.
- * All bunches of one variety should have the same weight.
- * Bunches should be held together by an elastic band, preferably a #10 or #12.
- * After being harvested, the herbs must be washed in cold water as soon as possible and allowed to drain before being put in the coolroom. But as cold air can dehydrate as much as warm air, the herbs must still be moist.
- * Pack them as quickly as possible and despatch them in a container which will preserve them in optimum condition during their travelling time. You may have to trial different packaging materials, but for long distances styrofoam boxes perform well.
- * Don't forget to label the boxes with your name and address, and the details of your buyers.

Harvesting for the dried herb market

Harvesting for the dried medicinal and culinary market is very different. For one you are no longer overly concerned with the appearance of the herbs. Leaves, which would not be acceptable fresh because they have holes in them or are otherwise marked, are now perfectly alright because they will be dried and milled.

Most dry herb production is done on a broad acre scale. You'll want to mechanise the harvest as much as possible. The original set up of the farm should have been done so that you can harvest your rows with some type of machinery.

Medicinal herbs are sold based upon their active ingredients, which means that sampling by your buyers will be required to determine the optimum harvesting time. Culinary herbs are used for their volatile essential oils and oleoresins. You will learn when they are ready for harvest as you progress in the industry, but a couple of simple rules apply:

- **aerial parts** (leaf) are harvested in the morning after the dew has evaporated. Do not pick when the herb is still wet with dew.
- **flowers** are best harvested right before the flower is fully opened, and after the early morning dew has evaporated.
- **roots** are harvested after the summer months, in autumn, when the aerial part of the herb is dying off.

The herbs must be prepared for drying as quickly as possible, otherwise you could end up with a pile of hot composting material! Herbs will begin to decompose as soon as they're cut. The process of breakdown gives off heat and this heat will damage your herbs. They need to be washed to reduce the microbe count, then spread out, ready to go into the dryer. Roots require a thorough scrubbing to clean them of soil. If you have to travel some distance to get your herbs into a dryer, they'll need cooling down before you set off.



Pyrethrum (left)
Tanacetum cinerariifolium
and *Derris*
Derris elliptica

are two insecticides which are widely used in organics, and which are allowed under the National Organic Standard, provided no other chemicals are added.

DRYING

All plant material will eventually dry if it's left in a warm to hot place. But this simple type of drying is not appropriate for a commercial operation. The herbs must be dried as quickly as possible at a constant temperature in a dark enclosure, to ensure retention of colour, active ingredients and volatile oils.

In the old days herbs were tied into bundles and suspended from rafters in large drying sheds or barns. Some growers try to duplicate this method in a solar dryer. However, there are many problems associated with this type of drying, as it's difficult to maintain an even temperature unless there's some other kind of heating at night, and the drying process will take too long. The herbs can end up discoloured and moldy with insect contamination. The only professional way is to dry the herbs in a heat pump dehydrator, where the heat can be controlled by thermostat.

Herbs must be dried at a constant and even temperature. The optimum temperature for leaf material is 30^o-35^oC and for root crops 40^o-45^oC. Start off at the lower temperature and increase it towards the end of the drying period. Most buyers specify a less than 10% moisture content in dried herbs. By using a moisture meter you can detect this percentage, however a general rule of thumb is that when you're able to crumble the leaf up in your hand, the herb is dry enough. Good drying requires an even air movement over the herbs, and an exhaust fan to pull out the moisture as it evaporates. The best system will have several racks on which the herbs are placed. They will be spaced in such a way that airflow over and under the herbs is ensured.

Some herb varieties will dry better if they are milled before drying, but they are exceptions to the rule. Most herbs are dried whole, as they will lose their volatile oils if they're cut up before being dried. Once the herbs are dried to 10% moisture they should be stored whole in an airtight dark container. Do not mill them until you have a guaranteed sale and the buyer has given you the specifications as to how he wants them delivered. Once the herbs are milled the clock starts ticking on their remaining shelf life.

Milling herbs properly is an art which can be learnt and, for most growers, is not outside the scope of their venture. Buyers will specify the size of the herb particles that they require. A hammer mill, which is a standard farm implement, may be used to reduce the herb to a coarse particle size. Most medicinal herbs are to be used in making extracts and will not require anything more sophisticated than this type of cut. A herbal tea manufacturer, however, will require a TBC (teabag cut) size, which requires more than a standard hammer mill. Were you to sell to this market, you would need a cutting mill or a shear mill. These mills have interchangeable screens which allow the miller to refine the size of the particles.

Herbs are generally sold in one of three forms:

- Whl** whole plant
- C/S** cut and sieved
- TBC** tea bag cut

PREPARING A SAMPLE

Unless you're already well known to the buyer, you will sell your herbs based on a sample which you will be required to submit. You will be judged on the quality of your herbs based upon this sample and your stated ability to supply. You must be as professional as possible. No matter how good the quality of your herbs is, if they are not well presented, they will not have the same impact on the buyer.



Valerian

Valeriana officinalis

The rootlets are widely used as a medicine (in tea or tincture form) which calms the nerves, relieves pain, improves digestion and lowers blood pressure. Planted in the garden, it attracts earthworms, increases phosphorus and improves the soil. Tea made from the whole plant speeds up the breaking down process in the compost heap and, sprayed on other plants, will improve and maintain their health.

Your samples should be presented in a clear zipper-lock plastic envelope containing 50-100 g of the herb. Each sample must be perfect. The herbs must be dried to a 10% moisture content and have a label firmly affixed to the envelope. On this label you must clearly write or print your name, address, contact telephone number, species of plant by botanical and common name and a batch number.

The sample should be accompanied by a cover letter in which

- you introduce yourself
- you state whether you are a certified organic grower and, if so, the name of your certification organisation, your organic status and your certification number.

You'll also tell them

- where the crop is grown
- if it is representative of your entire crop
- how much of the herb you have available
- how old the crop is
- when it'll be ready for harvest or if it is already harvested and dried
- methods employed in cleaning and drying.

your name and/or your company's name address contact phone/fax
species herb: common name botanical name
batch number

an example of sample labelling

WHICH HERBS TO GROW?

As mentioned before, you should be trialling a number of herbs to make sure that they will grow on your property and, more importantly, that you like working with them. Following are lists of herbs which will grow in Australia, if not perhaps in all areas, and for which there is a market.

You will notice that some herbs appear on both the culinary and medicinal lists. In fact, all herbs have medicinal qualities. That parsley decorating your plate, which more often than not is pushed to the side, is full of Vitamin C and iron. It's used medicinally for cystitis, kidney stones, anaemia, rheumatism and many other complaints.

Culinary herbs sold fresh

Common name	Botanical name
Basil, sweet/purple/bush/lemon	Ocimum spp
Burdock (root)	Arctium lappa
Chervil	Anthriscus cerefolium
Chicory/witloof/endive	Chicorium spp
Chillies	Capsicum annuum
Chives	Allium schoenoprasum
Coriander	Coriandrum sativum
Dill	Anethum graveolens
Fennel	Foeniculum vulgare
Lemongrass	Cymbopogon citratus
Lovage	Levisticum officinale
Marjoram, sweet	Origanum majorana
Mint	Mentha spp
Mustard greens	Brassica spp
Oregano	Origanum spp
Parsley	Petroselinum spp
Rocket	Eruca vesicaria
Rosemary	Rosmarinus officinalis
Sage	Salvia officinalis
Sorrel, french	Rumex scutatus
Tarragon	Artemisia dranunculus
Thyme	Thymus spp

Naturally this is not a complete list, but these herbs are more or less staples and can usually be sold all year through. They will form the backbone of your culinary herb business. Herbs are subject to fads, just like all foods. Vietnamese mint, for instance, was very much in demand in the days when Thai food was in fashion. That demand is no longer there.

The market also changes with the season, with salad herbs popular in the summer, while 'warmer' herbs are more sought after in winter.

Culinary herbs sold dried

There is a dried herb market for all varieties, with the most popular ones in descending order: mint, basil, chives, lemongrass, oregano, thyme, rosemary, coriander (the seed), parsley.



Dandelion

Taraxacum officinale

The dandelion, universally regarded as a weed, is in fact a very useful herb. Its deep taproot brings minerals to the surface for other plants to feast on.

Dried and roasted this root is used as a substitute coffee.

The plant also encourages earthworms, and added to the compost heap helps in the breakdown process.

The leaves are tasty and healthy in salads and in soups. Tinctures, teas and extracts of the root are used medicinally to treat gall and liver problems, chronic joint and skin complaints and many other health problems.

Medicinal herbs sold dried

The following herbs are very much in demand, and will grow well in many parts of Australia. Shown is the approximate annual usage in tonnes by Australian herbal manufacturers*.

Quantity	Common name	Botanical name	Part(s) used
10 - 20 t	Scullcap	Scutellaria lateriflora	aerial parts
	Echinacea	Echinacea purpurea	whole plant
5 - 10 t	Passionflower	Passiflora incarnata	flowering and fruiting tops
	Uva Ursi	Arctostaphylos uva-ursi	leaves
	St. Mary's Thistle	Silybum marianum	seed
1 - 5 t	Calendula	Calendula officinalis	flowers
	Dandelion	Taraxacum officinale	root, rhizomes and leaves
	Hawthorn	Craetagus monogyna	berries
	Chaste tree	Vitex agnus-castus	fruit
	Burdock	Arctium lappa	root

* According to Phil Daffy of Blackmores Ltd in 'The Market for Medicinal Herbs - a Manufacturers Point of View'.

***Other medicinal herbs for which there is a market,
and which can be grown in many regions of Australia, are:***

Common name	Botanical name	Part(s) used
Chamomile	Matricaria recutita (German chamomile)	flowers
	Anthemis nobilis (Roman chamomile)	flowers
Gotu Kola	Centella asiatica	whole plant
Red Clover	Trifolium pratense	flowers
Valerian	Valeriana officinalis	root, rhizome
Wild Yam	Dioscorea villosa	root, rhizome
Lemonbalm	Melissa officinalis	leaves, stem
Sage	Salvia officinalis	leaves
Vervain	Verbena officinalis	whole plant
Thyme	Thymus vulgaris	leaves
Elder flowers	Sambucus nigra	flowers
St. John's Wort	Hypericum perforatum	flowering plant
Motherwort	Leonurus cardiaca	whole plant
Peppermint	Mentha piperata	leaves
Yellow Dock	Rumex crispus	root
Nettles	Urtica dioica	leaves
Elecampane	Inula helenium	root
Licorice	Glycyrrhiza glabra	root
Globe Artichoke	Cynara cardunculus, Scolymus group	leaves
Marshmallow	Althea officinalis	root
Astragalus (Milk vetch)	Astragalus membranaceus	root
Goldenseal	Hydrastis canadensis	root, rhizome

*This is by no means a complete list.
Manufacturers will be able to specify the herbs they're looking for,
and in which quantities.*

Herbs sold dried for herbal teas

The herbal tea market in Australia is not very large, and is very competitive. There are only a few herbal tea manufacturers in the country, of which the largest one, The Koala Tea Company Pty Ltd, buys the following herbs:

Common name	Botanical name
Chamomile	Matricaria recutita (flower)
Peppermint	Mentha piperata (leaf)
Spearmint	Mentha spicata (leaf)
Lemongrass	Cymbopogon citratus (leaf)
Lemonbalm	Melissa officinalis (leaf)
Rosehip	Rosa canina (fruit)
Dandelion root	Taraxacum officinale (root)
Echinacea	Echinacea purpurea (aerial parts)

SOME USEFUL ADDRESSES

The Organic Herb Growers of Australia Inc.

Postal address: P O Box 6171, South Lismore NSW 2480

Office: 1/68 Magellan Street, Lismore NSW

Phone/fax: (02) 6622 0100

Information on herb growing and herb growing courses;
bi-monthly industry magazine 'The Herb Grower';
organic certification.

Seed suppliers

Richter's Herb Seeds, Eshcol Springs Nursery

Box 61, Gingin WA 6503

Phone: (08) 9575 7522 Fax: (08) 9654 2658

Royston Petrie Seeds Pty Ltd

P O Box 77, Kenthurst NSW 2156

Office and growing station: 77 Kenthurst Rd, Kenthurst NSW

Phone: (02) 9654 1186 Fax: (02) 9654 2658

Buyers of herbs

TABCO

26 Roseberry Street, Balgowlah NSW 2093

Phone: (02) 9949 4644 Fax: (02) 9949 4600

MediHerb Pty Ltd

P O Box 713, Warwick Qld 4370

Phone: (07) 4661 0700

Pharmaceutical Plant Co Pty Ltd

24 London Drive, Bayswater Vic 3153

Phone: (03) 9762 3777 Fax: (03) 9762 9992

Greenridge Botanicals Pty Ltd

P O Box 1197, Toowoomba Qld 4350

Office: 17 Freighter Avenue, Toowoomba Qld

Phone: (07) 4633 1202 Fax: (07) 4633 1806

Summit Health Products

34 Newman Street, West Brunswick Vic 3055

Phone: (03) 9386 6538 Fax: (03) 9384 1678

Herbal Extract Company

P O Box 107, Panania NSW 2213

Phone: (02) 9755 1933 Fax: (02) 9725 7026

Langdons

4-8 Parker Street, Footscray Vic 3011

Phone: (03) 9687 8011 Fax: (03) 9689 9113

The Koala Tea Company Pty Ltd

P O Box 6099, South Lismore NSW 2480

Office: 29 Owens Crescent, Russellton Industrial Estate, Wollongbar (Alstonville) NSW 2477

Phone: (02) 6628 6363 Fax: (02) 6628 6330

RECOMMENDED READING

A Modern Herbal

Mrs. M. Grieve F.R.H.S.

Tiger Books International, London

Practically all known herbs are written up in the book, which was first published in 1931.

It contains a lot of growing information, but was unfortunately written for British conditions, so adaptation to Australian conditions is needed.

The botanical, historical, culinary and medicinal information is still the best ever passed on.

This book is often described as The Bible for herb growers and herbalists alike.

Encyclopedia of Herbs & Their Uses

Deni Bown

Dorling Kindersley Ltd, London

Published in 1995, this is the modern Mrs. Grieve.

Over 1000 herbs are covered in this beautiful book, which gives you photographic pictures of all the herbs. Probably the best book yet for herb identification.

There is short and to the point growing and medicinal information for the herbs covered.

Herbal Harvest, commercial production of quality dried herbs in Australia

Greg Whitten

Agmedia

The book is written by an Australian for Australian conditions.

It gives very good information on growing, harvesting and drying on a small scale.

A good starter book if you know next to nothing about herb growing.