



Buchu

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Many of our plants have traditionally been used for food, medicine, crafts and charms. Some of these plants are now threatened while others that once formed an important part of our diet have been forgotten. It is hoped that this series of articles will help revive an interest in growing, using and conserving a valuable indigenous resource.

Learning to grow and use these plants will help:

- Promote the sustainable use of these plants.
- Provide practical growing information especially for threatened species.
- Reduce pressure of harvesting from natural populations in the wild.
- Inform the general public about indigenous useful plants.
- Preserve indigenous knowledge.

South Africa's best-known tonic medicinal plant is the buchu of the south-western Cape's mountain fynbos. Its aromatic oil-rich leaves are in great demand for the international food, scent and herbal medicine market and earn the country more than R150-million in distilled oil sales alone. Harvesting, permit-regulated by CapeNature, is largely from the wild because buchus are tricky to grow. However, recent research at Kirstenbosch and elsewhere has overcome many of these problems. Here are some tips to help you grow these useful and attractive shrubs.

Where do we find buchu?

The genus *Agathosma* has over 150 species with most occurring in the Fynbos Biome. *A. betulina* is naturally restricted to the mountain slopes of Nieuwoudtville, Piketberg, Tulbagh and the Cederberg. *A. crenulata* grows on mid-slopes and in valleys from Ceres to Swellendam. *A. serratifolia* grows in more sheltered montane areas between Caledon and Riversdale.

Description

Evergreen, single-stemmed, perennial branching shrubs up to 1.5 m - 2.5 m in height.

Opposite leaves with oil glands underneath, particularly along the dentate to crenulate margins. Leaves are rounded in *A. betulina*, oval in *A. crenulata* and narrowly oblong-spathulate in *A. serratifolia*. The oil glands release a distinctive smell when the leaves are crushed. White to pinkish or mauve flowers are borne from winter to early summer, lasting 6-8 weeks. The fruits are five-chambered, small green capsules that turn blackish brown when they are ripe. *Agathosma betulina* develops a large underground tuber-like storage organ which enables it, once established, to recover from surface harvesting and the effects of fire.

Conservation

All three species have relatively restricted distributions and are possibly under real threat in the wild, particularly the most highly-prized, *A. betulina*. Illegal harvesting of the leaves at the wrong time of year (before the seed has been shed) places further pressure on already vulnerable or declining wild populations. Local harvesters in Elands-kloof in the Cederberg blame frequent mountain fires for the declining wild buchu populations.

Ecology and pests

Buchu is susceptible to the soil-borne fungus *Phytophthora cinnamomii*, which attacks fynbos species. Like many fynbos plants, buchus prefer slightly acid soil (pH 5-6.5). Bees are important pollinators of these aromatic plants, which give a characteristic flavour to their honey.

Traditional and future uses

Medicinally the volatile oils obtained from the leaves are used for their calmative, anti-rheumatic and diuretic benefits and in the treatment of colds, coughs, stomach aches and uro-genital tract infections. They are also widely used as food flavourants and in the perfume and beauty product industries.

Buchu was first used for skin and stomach ailments by the indigenous Khoi people of the Western Cape. Its use was passed on to early Dutch, French and British colonial settlers as a cure-all, later finding its way to Europe to become one of South Africa's earliest medicinal plant exports. In Britain it was first introduced in 1821 and soon made its way into a number of international pharmacopoeias. In the Squire's 1886 companion to the standard *British Pharmacopoeia* the three above-mentioned species of buchu are listed, under the old name *Barosma*, as sources of dried leaves imported from the Cape.

Today the bulk of buchu leaves harvested are steam-distilled for their essential oils for the perfume, beauty product, flavour, food and medicinal industries here and overseas, although the dried leaves continue to be exported to homeopath, naturopath, and herbal supply houses in the United States, Europe and even New Zealand. In the United States 28 g of dried, powdered buchu leaves retail for \$5 (about R45).

A variety of compounds have been isolated from the essential oils of buchu leaves including pulegone, isomenthone and diosphenol which

ABOVE LEFT: Round-leaf Buchu, *Agathosma betulina*, growing in its natural habitat near Piketberg in the Western Cape. Photo: Ernst van Jaarsveld.

BELOW: *Agathosma crenulata*. Photo: Alice Notten.



give buchu oil its characteristic blackcurrant smell and flavour but the profiles differ between species. The possibly toxic pulegone is found in high concentrations (50%) in *A. crenulata*, giving its oil a sharp smell. Pulegone is only minimally present in *A. betulina* (less than 3%), the favoured choice for the local and export food, medicinal and bottled water flavour markets. Pharmacological analysis of the essential oil and extracts show weak anti-microbial, anti-oxidant, anti-inflammatory and anti-spasmodic activity. Buchu is also popularly available as a tonic and digestive tea, and a brandy tincture developed by early Dutch colonists, 'boegoebrendewyn' is still taken for many conditions.

Commercial exploitation

Since demand for dried buchu leaves and the steam-distilled oil extract far outstrips production, sustainable commercialization of buchu has become critically important if the three species are to survive in the wild. Established plants in the wild can yield an estimated 0.5 kg of foliage a year for harvesting (5-15 tons per ha). It takes one ton of wet buchu to produce a kilogram of distilled oil. Successful application of new growing methods has made possible the establishment of buchu farms in fynbos areas. A mature buchu plantation that will produce an income takes four to six years to establish, but provides a more stable income than harvesting from the wild.

GET CONNECTED

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WHERE CAN I GET BUCHUS?

Seeds of several buchu species are available from the Kirstenbosch Seed Room at tel 021 799 8624 or email seedroom@sanbi.org.

ACKNOWLEDGEMENTS

My thanks to colleagues for useful growing and field information and, as usual, to my Khehla, Peter Croeser, for useful suggestions, advice and editing.

READING

- Jodamus, N. 2003. *Agathosma crenulata*. www.plantzafrika.com.
- Jones, C. 2007. <http://aquabuchu.com/herbs.htm>
- Jones, L. 2004. *An introduction to sustainable harvesting of some commercially utilised indigenous plant species in the cape floristic region* edited by Lee. Critical Ecosystems Partnership Fund & Indigenous Vegetation Consultancy, Cape Town.
- Palmer, E. 1985. *The South African herbal*. Tafelberg, Cape Town.
- Squire, P. 1886. *Companion to the fourteenth edition of the British Pharmacopoeia*, J & A Churchill, London.
- Van Wyk, B.-E. & Gericke, N. 2000. *People's plants: a guide to useful plants of southern Africa*. Briza, Pretoria.
- Van Wyk, B.-E., Van Oudtshoorn, B. & Gericke, N. 1997, 2009 (2nd ed.). *Medicinal plants of South Africa*. Briza, Pretoria.
- Williams, S. & Kepe, T. 2008. Discordant harvest: debating the harvesting and commercialization of wild buchu (*Agathosma betulina*) in Elands-kloof, South Africa. *Mountain Research and Development*. 28 (1), 58-64.

WHAT'S IN A NAME?

Botanical names: The three buchu species harvested commercially from the wild are *Agathosma betulina*, *A. crenulata* and *A. serratifolia*. *Agathosma* is derived from the Greek agathos (good) and osme (scent), referring to the fragrance of its leaves.

Family name: Rutaceae, the citrus family, many of whose members have leaves with conspicuous oil glands and a sharp lemon-like scent when crushed.

Common names: *A. betulina*: Buchu (Khoi), Round-leaf Buchu (Eng.), iBuchu (Xhosa), Rondebelaarboegoe, Bergboegoe (Afr.). *A. crenulata*: Oval-leaf Buchu (Eng.), Anysboegoe (Afr.). *A. serratifolia*: Long-leaf Buchu (Eng.), Kloofboegoe (Afr.). European herbal books often still refer to buchu species under the old generic synonym *Barosma*. They distinguish between Short Buchu, or 'shorts' (*A. betulina*), Oval Buchu, or 'ovals' or 'shortbroads' (*A. crenulata*) and Long Buchu, or 'longs' (*A. serratifolia*).

An easy guide to growing

buchu

ACTIVITY	ENVIRONMENT REQUIRED FOR SUCCESS	TREATMENT	TIME	REMARKS
Harvest seed	Fruit or seed capsules develop after flowering. The seed capsules are harvested by hand before the seed is dispersed from the ripe capsule. Select ripe seed capsules that are plump and dark green.	Seed can be stored in a brown paper bag in a ventilated area.	Seed ripens towards late spring and early summer (October to December).	The seeds collected from fully ripe capsules germinate well. If the seed is harvested too early the embryo will not develop and the seed will not be viable.
Seed Sowing	Sow in seed trays in a well-drained medium of equal portions of sand and compost.	Seed can be smoke-treated with Instant Smoke Plus® seed primer* for better germination results. Water the seed with an anti-fungicide to avoid damping-off.	Sow seed in autumn (March to April).	Place the trays in a covered area with good light and good air circulation. Keep seed trays damp, watering once a day. Germination occurs within 4 weeks to 2 months. When four true leaves have developed and/or the roots are 5-10 mm long prick out the seedlings into 0.5 l bags. Pinch out the growing tips of the seedlings to encourage bushy growth.
Vegetative propagation	After flowering, the plant produces new shoots, which are ideal for tip-, stem- or heel cuttings. Cuttings have the advantage of producing a flowering plant quicker than seedlings.	Tip cuttings 50-70 mm are taken from current year's growth. Prepare the cuttings by making a clean cut below the node and remove a third of the foliage. Dip the base of the cutting in a rooting hormone such as Seradix No.2®. Place the cutting in a tray containing a medium of 50% bark and 50% polystyrene. Ideally cuttings are placed in a well-aerated propagation unit, with misting and bottom heat of 21-24 °C.	Spring and midsummer (September to January).	Rooting occurs within 9-11 weeks and a hardening off period of 2-3 weeks is recommended. Inspect cuttings in a mist unit on a regular basis for any die-back, diseases or fungal infection. Pot root cuttings into a well-drained, humus-enriched potting medium. Allow plants to grow for 7-8 months before planting out into the garden. Feed plants with a well-balanced nutrient during summer.
Cultivation	Plant in full sun, in soil that is acid (pH 5-6.5), well-drained and composted. Plant out in-groups of three to nine, 20-30 cm apart.	Water well after planting. Apply a layer of mulch around the plants to reduce weeds and keep the soil temperature cool.	Buchus are best planted out during autumn, winter and spring (rainy season).	Once planted avoid disturbing the soil around the roots of the plants. Buchus are slow growing and must not be placed next to fast growing plants. Plant with slow growing species to allow each plant to develop to its full potential. Prune buchus when the plants become untidy to maintain their shape and encourage new growth. Weed on a regular basis.
Pests and diseases	<i>Phytophthora cinnamomi</i> , a soil-borne fungus, attacks fynbos species.	Apply a layer of mulch on an annual basis to reduce soil temperatures. Infected plants should be removed. Treat with Fongarid®.	Active during the hot summer months (December to February).	The activity of this fungus is promoted by high soil temperatures. It attacks the roots system of the plant, preventing the uptake of water causing the plant to wither rapidly and die.
	Citrus caterpillar defoliates the plant.	Control by hand picking or using a stomach insecticide.		

*Instant Smoke Plus®, seed primer is produced and distributed by the Seed Room at Kirstenbosch.