

Sustainable Wild Buchu Harvesting Guideline

In collaboration with the Buchu Association
and Cape Nature

buchu
ASSOCIATION

 CapeNature





Off-white *A. betulina* flower in bloom



Harvester in a buchu cultivation field

Introduction

Agathosma, commonly known as buchu, is internationally renowned for its distinctive scent, flavour applications, essential oils, and the medicinal properties found in its highly aromatic leaves. The most recognized variants are *Agathosma betulina* and *Agathosma crenulata*, both endemic to the South African Fynbos Biome.

A. betulina has more medicinal and flavour interest due to having lower pulegone levels while *A. crenulata* has higher interest in the perfume industry.

Given the botanical interest surrounding buchu, and its demand fluctuation, it is important to safeguard its wild populations and to educate and protect its role in our heritage. Increasing threats of illegal harvesting, wildfires, overharvesting, biodiversity loss and land degradations have led to a loss in wild buchu populations and increased buchu cultivation.

Aim of the Guideline

To provide education to interested individuals and harvesters about the distinctions between the two buchu varieties and offer guidance on how and when to harvest them sustainably, ensuring the protection and preservation of buchu populations in their natural habitats.

Botanical Description

Buchu is a perennial shrub with serrated, highly strong-sweet, peppermint-like scented leaves, that contain oil glands located on the underside of the leaf.

A. betulina contains a lignotuber and is known for its robust, resprouting capabilities that grows back once fires occur.

A. crenulata and Hybrid buchu contain no lignotuber and can only regenerate through seeds when fires pass through. Note that most fynbos seeds need fires for germination, but frequent, reoccurring fires can result in local extinction.

The vegetative, younger buchu stems are light green to dark-red in colour, while older buchu stems have a woodier, bark-like colour.

Importance of Understanding the Varietals

It is essential to determine which plants can withstand pruning and which may suffer. Assessing the leaf structure, shape, width, apex, as well as the colouration of vegetative growth and flowers, aids in varietal identification.

When identifying varietals, use mature buchu leaves from the base of the plant. Avoid comparing buchu using immature leaves, as this can lead to confusion.



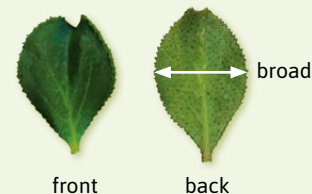
Notice the dark- red colour stems of young vegetative growth of *A. betulina* diosphenol chemotype

Botanical Differences between Varietals

	<i>A. betulina</i>	<i>A. crenulata</i>
Common name	Round-leaf buchu, short buchu and Bergbuchu (found at higher, drier altitudes).	Oval-leaf buchu, Long-leaf buchu, Vleibuchu (found at lower, wetter altitudes), Boombuchu (tall plant structure displaying apical dominance).
Leaf shape	Distinctive broad, dark green leaves.	Narrow, light green, oval-shaped leaves.
Leaf apex	Well-defined, downwards-curved apex.	Less-defined, uniform- downwards curved apex.
Flower colour	Varying shades of pink, mauve and off-white colours.	Pure white flowers.
Height	Grows to 1-1.5m	Grows to 1.5-5m
Chemotypes	Diosphenol and Isomenthone.	None.
Vegetative growth colour	Diosphenol chemotype features dark red-growing tips while Isomenthone features light green growing tips.	Features light green growing tips.
Harvesting period	From December to end of April for optimal oil yield and quality. Use pruning shears/secateurs rather than a sickle for a cleaner and therefore more sustainable cut.	

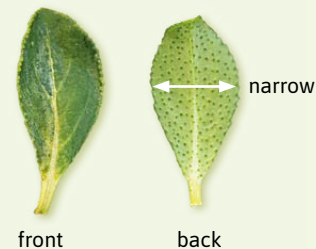
Agathosma betulina

Well defined apex



Agathosma crenulata

Less defined, uniform apex



Geographical Distribution

Both varieties thrive at altitudes ranging from 200 to 2000 meters above sea level, typically favouring cooler, moist southern facing slopes in rocky, sandy areas. A good indication when scouting for buchu, is to locate where Waboom (Protea Nitida) are situated, as buchu is found in the same longitude area across the mountain range due to having similar soil structure and mineral content.

A. betulina

Found in the area stretching from Clanwilliam in the north down to Tulbagh in the south. Within the *A. betulina* species, two distinct chemotypes exist, the diosphenol and the isomenthone chemotype. The diosphenol chemotype is characterized by higher levels of diosphenol with lower levels of isomenthone, which originates from the Cederberg area. The isomenthone chemotypes has higher levels of isomenthone with lower levels of diosphenol originating in the Piketberg area.

A. crenulata

Does not exhibit variation in chemotypes and is found on mid-slopes stretching from Tulbagh to Stanford.

Hybrid buchu

Originates in the overlapping regions where *A. betulina* and *A. crenulata* occur mainly in the Winterhoek and Witzenberg mountains.

Agathosma betulina



Agathosma crenulata



Source: GBIF



Buchu harvesting occurs from December to late April

Steps on how to Sustainably Harvest Buchu

Step 1: Permit application

Before harvesting buchu a permit is required. A permit costs R250* for 1 season when harvesting in natural veld. Apply on Cape Nature Website and the length of time to receive a permit is 30 days.

*2024 rate

Step 2: Assessment of population regrowth

Before harvesting, a responsible scout should assess the regrowth of the buchu population. This visual assessment is best done during buchu flowering season (May-November) to increase its visibility and its varietal differentiation.

Step 3: Distinguish between the two buchu varieties

Use the bottom leaves, look at the shape and apex, assess plants height, foliage ratio, vegetative growth and flowers colour.

Step 4: Evaluate the plants height and foliage ratio

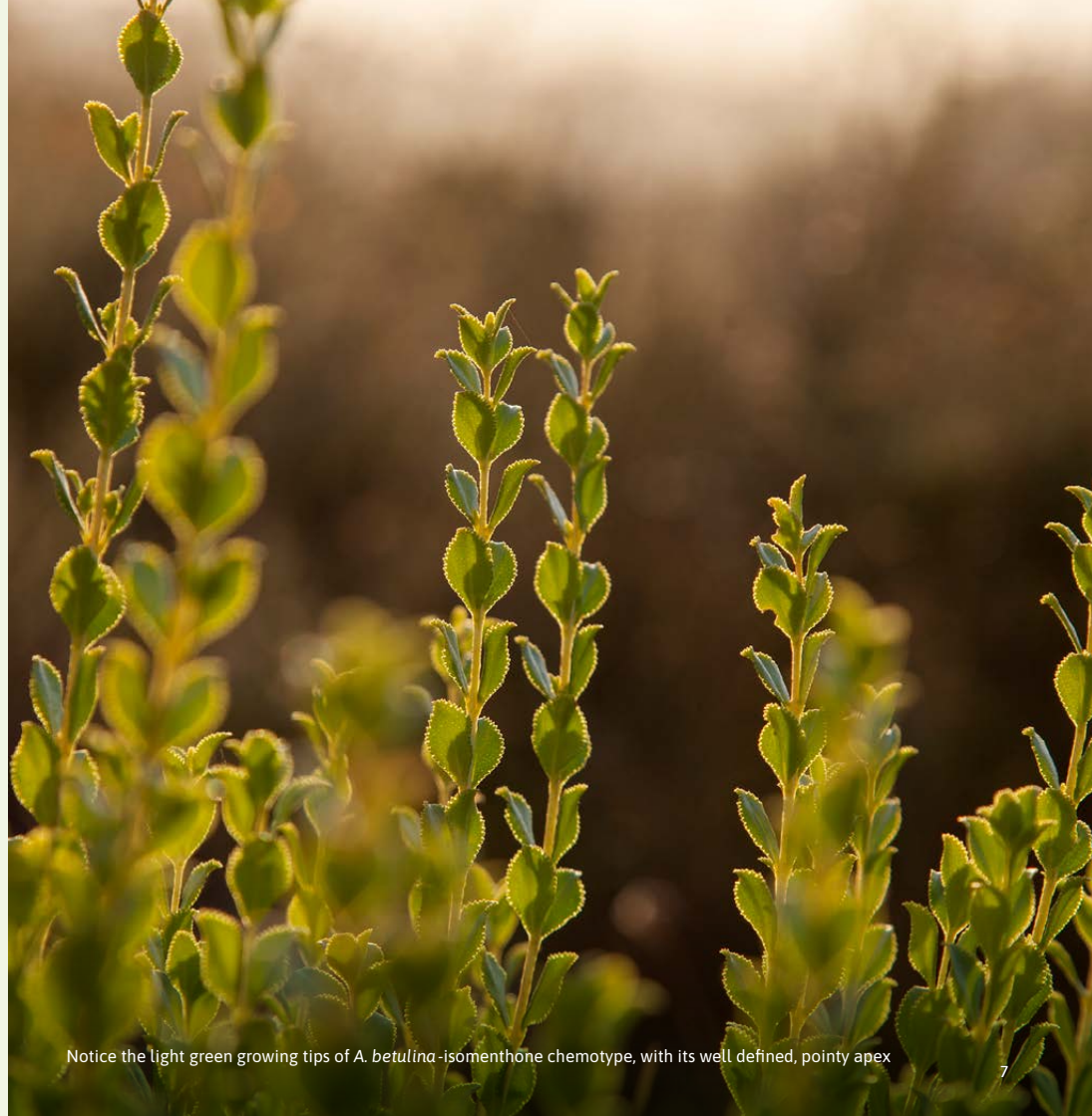
	<i>A. betulina</i>	<i>A. crenulata</i> and hybrid
Pruning height A lignotuber is an underground structure that stores energy which the plant can use to regenerate after severe bushfire.	Contains a lignotuber and is a robust resprouting plant, allowing it to be pruned continuously to a maximum of 15cm above the ground. Foliage is not needed below the cut mark.	Requires critical leaf foliage beneath the cut mark and can be pruned to 40cm above the ground. Prune into a lollipop shape that needs higher pruning than the previous harvest. For larger <i>A. crenulata</i> and Hybrid buchu, harvest 2/3 of plants height, leaving the 1/3 unharvested.
Apical dominance Apical dominance is when the plant channels its energy into the growth of the central woody stem.	No apical dominance	Exhibits apical dominance, which results in reduced branching and increased vertical growth. Prune the apical dominant stem, with abundant leaf foliage below the cut mark, to promote more uniform vegetative growth. This increases branching and balanced foliage-to-stem ratio.

Step 5: Unharvested seed-bearing stem

When harvesting buchu, leave one unharvested seed-bearing stem on each plant for seed production. Buchu only flowers on two-year-old wood- this ensures continuous seed reproduction even when the plant is harvested.

Step 6: Implement rotational and selective harvesting practices

Allow buchu to rest for 2-3 years before harvesting. Only harvest buchu with abundant foliage to leaf ratio.



Notice the light green growing tips of *A. betulina*-isomenthone chemotype, with its well defined, pointy apex

Important Factors to know when Harvesting Buchu

When to Harvest

From December to late April, is the most sustainable period for buchu wild harvesting. Harvesting in this period ensures optimal yield, minimal pulegone toxicity, and long-term buchu health. Harvesting wild buchu during the winter months from May to the end November is detrimental and should be prohibited through landowner and legal regulations.

Implementing specific timeframes for buchu harvests is essential for flower and seed formation to ensure wild buchu longevity. Harvesting buchu on rainy wet days can lead to low oil yields and fermentation of harvest.

Understanding Buchu Reproductive Cycle

Buchu flowers and seeds from Mid-April to November, during this time period harvesting is prohibited. High pulegone levels are generated during this stage which causes liver toxicity when consumed by humans. The lowest and safest levels of pulegone is observed after the seed pods are opened and the seeds are expelled in November.

Buchu Vulnerability

Continuous harvesting without adequate regrowth time poses a great threat to wild buchu populations, leading to a reduction in plant size, limited reproductive capacity and local extinction. Great emphasis and strict monitoring should be placed on the fact that buchu only flowers on two- year-old wood to ensure continuous reproduction cycles.

Continuous illegal harvesting not only threatens buchu survival rate but increases soil erosion and disrupts delicate ecosystems that are a part of our cultural heritage. Buchu's continuous reproductive cycle is extremely crucial for areas suffering from reoccurring fires to prevent local extinction and preserve gene biodiversity.

Market Highs and Market Lows

With growing interest in buchu, more focus has shifted to cultivation, which eases pressure on wild populations. However, wild buchu faces threats during market highs, leading to increased poaching.

During low-demand periods, wild buchu can recover, and when not harvested for more than 3 years, their stems tend to elongate and woodify with limited leaves located at the top of the stem. This issue has especially arisen with *A. crenulata* due to its difficulty in harvesting back through its woodified stem. Avoid harvesting buchu with elongated, woody stems with limited foliage due to poor oil yields and quality. Allow this buchu to act as a mother plant for future buchu generations.

Harvesting Equipment Preference

Pruning shears or secateurs are preferred over sickles when harvesting buchu. This ensures buchu safety and sustainability by allowing more precise pruning. While sickles may be more efficient, they require greater skills and experience to avoid injury and damage due to overcutting.

Rotational Harvesting

Implementing adequate time for buchu regrowth and reproduction is essential for buchu sustainability. Since buchu only flowers on two-year-old wood.

Allow buchu to grow unharvested for two to three years to facilitate sustainable growth, flowering and seed production.

When harvesting, always leave a singular stem unharvested to support plants photosynthesis and reproductive mechanisms. This singular stem will encourage future flowering and seeding. With *A. crenulata*, avoid choosing the dominant stem as the unharvested seed-bearing stem this will encourage apical dominance.

For *A. crenulata* select a new unharvested seed-bearing stem each consecutive year to prevent apical dominance and promote healthy branching and increased foliage.

Selective Harvesting Methods

Harvest buchu with an abundant foliage-to-stem ratio, avoiding plants with yellowing discolouration, dying bushes and buchu with elongated, woodified stems with limited leaves. Do not harvest buchu when in flower or contains unopened seed pods. This will affect its oil quality, displaying higher pulegone levels.

Evaluation and Quality Control

Evaluate the harvest before processing to monitor poor harvesting methods. The presence of sticks and stones are good indications of poor harvest methods such as root uplifting, or low cutting that could kill and damage buchu.

Inspect the harvest to ensure it is buchu, many fynbos plants look very similar but don't contain the underside oil glands. This could be an easy contamination and weight gain for harvesters.



Store harvested material in a woven bag away from direct light

Transportation

Transport harvested material in woven bags to allow ventilation and minimise sweating and fermentation to preserve its volatile oils. Store harvested material in a cool, shaded area before pickup. Pickup should occur on the same day of harvest for best quality preservation. When transporting to processing sites, transport in an open ventilated vehicle, while avoiding stacking of bags to preserve its quality. Wet buchu and compacted buchu will oxidise and ferment.

Storage

At the processing site, check for any foreign material such as plastics, stones, or insects. Air-dry or distil as soon as possible after harvested. If harvested buchu can't be distilled immediately, store away from direct sunlight in a 10-degree cool room for a maximum of a week before quality degradation occurs. Discolouration of the leaves is a good indication of quality degradation. Weigh in and update track records for monitoring purposes.

Fascinating Facts About Buchu

Buchu holds significant value in the Khoikhoi and San cultures, where it has long been used for medicinal, cosmetic, and general wellness purposes. Historically, the San applied extract mixtures of fats and buchu plant to their bodies, benefiting from the antibacterial, antifungal, insect-repelling, and deodorizing properties of the plant. (Van Wyk et al., 1997)

The leaves of the buchu plant are traditionally chewed or brewed into an infusion to treat various ailments. They have been used to soothe digestive issues, stimulate appetite, and prepare a brandy tincture known as "boegoebrandewyn," which is employed to disinfect wounds and ease menstrual cramps.

Buchu is also recognized for its diuretic effects, which help detoxify the body and support the treatment of kidney and urinary tract infections (UTIs). Additionally, it has been known to relieve symptoms of colds, flu and chest congestion. (Watt and Breyer-Brandwijk, 1962; Van Wyk et al., 1997, Simpson, 1998; Swardlow, 2000)

In clinical trials *A. betulina* oil displayed spasmolytic activity on smooth muscle (Lis-Balchin et al., 2001) and ethanolic extract with combined essential oil of *A. betulina* exhibits analgesic (pain relieving) and anti-inflammatory properties. (Chiguvare, 2015, Chiguvare et al., 2016)



Buchu only flowers on 2-year-old wood

Regulatory Protection facilitated by Cape Nature and Landowners

Buchu is subject to strict regulation and is proclaimed least concerned status on SANBI Red data list of Threatened Species. To ensure its conservation, permits are required for buchu harvesting, trading and cultivation, which is overseen by Cape Nature.

For new permit holders, a general site survey is conducted by Cape Nature prior to a permit being issued to ensure buchu grows naturally there. When permits are reissued, random farm check-ups prior to the commencement of the harvest is conducted. These checkups especially occur when buchu is in high demand, to ensure sufficient buchu regrowth.

In the event of poaching, contact Cape Nature, 022 9312900, who will coordinate law enforcement for assistance. If poaching occurs after hours, contact the nearest police force to address and assist in the situation.

If poachers are found with buchu valued at over R3000, a criminal offense will be prosecuted in court. For smaller poached volumes, fines will be imposed for possession and trespassing.

Poached buchu is fuelled by market fluctuation and the willing buyer that encourages the sale of illegal harvested material. To diminish the temptation of poaching, it is crucial to target the actions of the willing buyer. Encourage transactions of buchu through bank transfers rather than facilitating quick cash exchanges. This shift not only safeguards buchu populations but also fosters a culture of responsible conservation.

For any buchu enquires you can contact Cape Nature Conservation Officers: gmalherbe@capenature.co.za and abrink@capenature.co.za



When harvesting buchu, leave a few stems for flower and seed production

buchu

ASSOCIATION

For queries or additional
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