



Australian Government
Rural Industries Research and
Development Corporation



HOOKER'S BANKSIA

Product: **Hooker's Banksia, Acorn Banksia**

Botanical name: *Banksia hookeriana*



Industry &
Investment

Quality specifications for
Australian wildflowers

Product: **Hooker's Banksia, Acorn Banksia**
Botanical name: *Banksia hookeriana*

***Banksia hookeriana* is a major Banksia species grown for the cut-flower market.**

It has large upright, terminal, cylindrical flower heads, 7 to 12 cm long. Each brush-like head is composed of hundreds of tiny individual flowers or florets. Each flower is fully open when the wiry style is sticking out. The flower spikes are initially creamy pink to peach, but change to golden orange as the florets open and the flower matures.

There is strong demand for this *Banksia* on both domestic and export markets.

As with other banksias, the number of open florets determines the correct picking stage for maximum vase life. The first florets to open are those at the base of the flower head. Unopened flower heads – the optimum stage for the export market – should be fully sized, firm and wiry to the touch, and not soft. Flower heads with up to 20% of the lower florets open are suitable for domestic markets. Handle and pack the flower heads carefully. Immature flower heads or 'candles' are also marketed.

This *Banksia* originates from the sand plains of southern WA. In cultivation, plants need very well drained, light to medium soils with partial or full sun for optimum growth. They will tolerate light frosts.

A mature bush of *B. hookeriana* can yield more than 50 stems per plant. Flower heads dry well and are also sold dried and dyed. Flower heads at stage 3 are ideal for dyeing.

Banksia hookeriana tends to develop excessively curved (and unmarketable) stems if they are low on the bush and shaded or receive excessive irrigation during the vegetative growth phase. Prune the canopy to improve light penetration into the centre of the bush.

Prune at or immediately after harvest. Research has shown that most flowers are produced on shoots that are 2 years old and of a minimum diameter. So, in pruning, keep shoots with a stem

diameter of 8 mm or more, and leave 4–5 healthy leaves below the cut, from which new shoots can grow to produce future flowers. Remove any thin and weak stems, which are less likely to flower.

This is one of the most susceptible banksias to *Phytophthora* root rot. Developing flower heads are susceptible to attack by the Banksia boring moth; growers need to control this pest to minimise the risk of unmarketable flowers.

Banksia hookeriana suffers from grey discoloration of the flower heads, especially during cool, wet weather, due to infection by yeast-like fungi. Use protective fungicide sprays on developing flower heads, and do not harvest when they are wet.

Open flowers attract insects and birds, which may damage flowers (especially birds). Insects and predators such as spiders also create quarantine problems. Disinfestation before marketing is important.

Banksias for the fresh market must be placed in water quickly after harvest and cooled, as they dry out quickly and lose freshness and quality. Leaves dry out quickly and can't easily be rehydrated.

When they reach the end customer, *Banksia hookeriana* flowers should have no more than 20% of the individual flowers open, so that most of the flower head is creamy pink to peach with an orange ruff of opened florets at the base.

Flowering season:

April to September. 'Candles' are sold in March to July.

Typical vase life:

10 days

Other products to which this specification can be generally applied:

Banksia hookeriana selections and hybrids such as 'Waite Orange'.



Typical stem trimmed ready for market

Product: **Hooker's Banksia, Acorn Banksia**

STAGES OF OPENING

(Note: leaves closest to the camera have been removed to provide a complete view of the flower head. They would not be removed in normal commercial practice)



Stage 1

Immature stage: marketable as a 'candle'



Stage 2

Slightly immature stage – flower still soft: unsuitable for all markets



Stage 3

Prime stage to market – tip of bloom is fully swollen and firm and wiry to touch: ideal for export and for dyeing (no florets open)

COMMON DEFECTS

Common defects to be avoided at market entry:

- Deformed or asymmetrical flower heads
- Damaged flower heads
- Distorted, dried or physically damaged leaves
- Poorly coloured foliage due to nutritional deficiency
- Insect borers
- Overmature or dried-out flower heads
- Bypass shoots or secondary flower heads
- Bent stem or flower head offset at an angle



Bent stem – discard



Bird damage – discard



Aborted florets – discard



Deformed flower head – discard

The stages shown apply to the product at market entry. Pay attention to the weather, time of year, and mode and duration of transport, because the flowers will continue to open during transport. You must consult with your target market to ensure that the flowers arrive at the desired stage.



Stage 4

Ready to market (latest stage) – 20% of florets open: suitable for both export and domestic markets and for dyeing



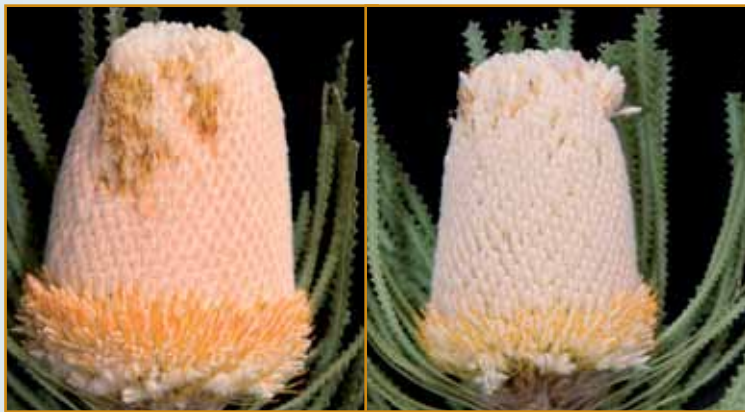
Stage 5

Late stage – up to 40% of florets open: suitable for domestic markets



Stage 6

Overmature stage – >80% of florets open: unacceptable to many markets



Damaged flower head – discard



Left flower is mature enough to harvest (wiry to touch); right flower is immature and still soft and is not ready to harvest



Deformed and damaged flower head – discard



Borer damage (at the base of the flower head) – discard



Left flower is mature enough to harvest (wiry to touch); right flower appears mature but is still soft and is not ready to harvest

Product: Hooker's Banksia, Acorn Banksia

FLOWERS

Appearance	<p>Flower head creamy pink to peach where florets are unopened, and golden orange at the base where florets have opened. Not dull or greyish.</p> <p>Size (diameter) and length must be proportional to stem length.</p> <p>Flower head follows in a straight line from the stem (and is not offset from the stem at more than 30°).</p>
-------------------	--

When to harvest	<p>Flower head fully formed, fully swollen at the tip, firm and wiry to touch; and, at final size, symmetrical.</p> <p>No individual florets open and flower head uniformly creamy pink to peach (export), or <20% of individual florets at the base of the bloom open and golden orange (domestic markets).</p> <p>Avoid harvesting when flower is wet.</p>
------------------------	---

Damage	<p>No asymmetrical, deformed or damaged blooms.</p> <p>Ensure columns of florets form a straight line up the flower head.</p> <p>No bypass shoots at the base of the flower head.</p>
---------------	---

Contamination	<p>Product free of grit and soil, weeds or weed seeds, living or dead insects, and signs of insects or spiders, such as webbing.</p>
----------------------	--

Pests and diseases	<p>No apparent pest or disease damage.</p> <p>Discard any poor-quality product or stems with insects or fungal infections.</p>
---------------------------	--

LEAVES

Appearance	<p>Mid green and crisp, not dull or wilted.</p> <p>Minimum discolouration (<2% by area and affecting <10% of leaves); no yellowing.</p>
-------------------	---

At harvest	<p>Remove leaves from the lower half of the stem, or as buyer requests.</p>
-------------------	---

Damage	<p>Minimum evidence of pests, disease or other blemishes, such as mechanical damage. Leaves entire (no insect feeding damage).</p> <p>No spiders or spider webs.</p> <p>Free of visible chemical residues.</p>
---------------	--

--	--

STEMS

Appearance	<p>Rigid and strong enough to support blooms, without being too heavy and bulky.</p> <p>Bend <30°.</p> <p>Free of disfiguring trim marks or other blemishes.</p> <p>Neatly cut end.</p>
-------------------	--

Length	<p>According to market demand.</p>
---------------	------------------------------------

RECOMMENDED HANDLING AT HARVEST

Minimise drying out and exposure to heat – pick when it is cool, preferably straight into buckets of clean potable water, and hold in the shade.

Move cut stems promptly to a cool, shaded packing area.

GRADING AND BUNCHING

Grading	<p>Reject any contaminated stems.</p> <p>Sort stems according to maturity, length and thickness: flower head proportional to stem length. Market smaller heads on shorter stems.</p>
----------------	--

Bunching	<p>Flowers are generally marketed as single stems.</p>
-----------------	--

Stem length	<p>Stem length (cm)</p> <p>100</p> <p>90</p> <p>80</p> <p>70</p> <p>60</p> <p>50</p> <p>40</p>
--------------------	--



HOLDING AND STORAGE

Cooling

Effective cooling soon after harvest is important to retaining quality and maximising vase life. There are two options:

- Cool, process, cool – for example, remove field heat by cooling flowers immediately on entry into shed to 10 °C in buckets of solution, process flowers (bunch, grade), and then cool to 2–4 °C by either forced-air cooling (if boxed) or holding overnight in a cool room in postharvest solution.
- Process within 1 hour of cutting, and then cool to 2–4 °C by either forced-air cooling for 20–30 minutes (if boxed) or holding overnight in a cool room in postharvest solution (if in buckets).

Forced-air cooling of packed flowers is ideal for large volumes of product.

Temperature and humidity

Hold in a high-humidity cool room (95%) at 2–4 °C for up to 4 days.

Another way of achieving high humidity is to cover the flowers with plastic sleeves or plastic sheeting.

Postharvest solutions

Postharvest solution: Hold in clean potable water with an added registered biocide.

To date, banksias have not responded to floral preservatives. Sucrose pulsing does not improve quality or vase life (sucrose concentrations above 2% are detrimental).

To increase water uptake and improve hydration it may be worth holding the stems in deep water (e.g. 20 cm) or in special hydrating solutions (see *Postharvest Manual** for details).

Holding solution: Same as postharvest solution.

Longer-term storage

For longer storage seek professional advice and test in the market before committing product.

PACKAGING

Pack only dry, cold flowers.

Banksias are heavy, so ensure the box used is strong enough.

Handle carefully to avoid damage, particularly if florets are open.

Pack with flower heads at each end of the box and stems in the middle to avoid damaging blooms.

Avoid packing too many stems per box.

Especially for export, stems in each box should be approximately the same diameter and length, and flower head size should be consistent.

Use boxes with holes to allow forced-air cooling and to facilitate fumigation.

Minimise water loss, especially for long-distance shipping, by lining boxes with plastic. If the flowers will need forced-air cooling or fumigation, line only the long sides, tops and bases of the boxes, not the ends.

Cool flowers to 2–4 °C before transport.

LABELLING AND DOCUMENTATION

Label boxes and buckets as recommended in *Postharvest Manual** or as required by customer.

Ensure box contents are exactly the same as specified in the documentation and on the end of the box.

TRANSPORT

Refrigerated vehicle at 2–4 °C.

COMMON POSTHARVEST PROBLEMS Refer to *Postharvest Manual** for general advice.

Fungal decay in storage due to botrytis (grey mould)

Use preharvest fungicide sprays during wet weather to reduce the risk of botrytis and yeast-like fungi developing on the flower head.

Use preharvest insecticide sprays to reduce the pest population at harvest.

Insects (for export)

Fumigate flowers with a registered product before dispatch to kill insects. Check flower heads for insects before packing (insects such as bees may be trapped in the flower head).

Avoid postharvest dips if any florets are open.

Ethylene sensitivity

Banksia hookeriana does not appear to be susceptible to ethylene.

Messages for importers and wholesalers

- Recut stems and place into fresh water containing a registered biocide.
- To increase water uptake and improve hydration it may be worth holding the stems in deep water (e.g. 20 cm) or in special hydrating solutions (see *Postharvest Manual** for details).
- Cool product before marketing or sending on and keep it cool (2–4 °C).
- Maintain good hygiene and keep containers clean.

Messages for retailers

- Recut stems and place into fresh water containing a registered biocide.
- Do not mist the flowers.
- Use clean buckets and containers for displays.
- Do not display flowers in areas that are exposed to full sun, draughts, high temperatures or vehicle exhausts, and preferably do not display near fruit and vegetables. Use refrigerated displays if possible.
- Tell the customer how to care for the flowers and emphasise the need for fresh clean water and clean vases.

Messages for consumers

- Keep vase filled with fresh clean water. Check daily, as flowers can use a lot of water. Change the water at least every second day. Always use clean vases and clean water.
- Do not display in areas that are exposed to full sun, draughts or high temperatures. Keep as cool as possible without freezing.
- Discard other flower types in the same vase when they reach the end of their vase life.

SUPPORTING INDUSTRY PARTNER:



Authors: Bettina Gollnow and Dr Ross Worrall. Photographs by: Lowan Turton and Dr Ross Worrall.

This publication is one of a series of Quality Specifications for Australian Wildflowers.
ISSN 1440-6845. ISBN 978-1-74254-006-1. RIRDC Publication No. 10/033. www.rirdc.gov.au

*The *Postharvest Manual* is the manual *Postharvest Handling of Australian Flowers from Australian Native Plants and Related Species*, 2nd edition, 2010. ISBN 978-1-74254-000-9. RIRDC Publication No.10/027.

Both publications were developed by RIRDC Project No. PRJ-000331.

The information contained in this publication is intended for general use to assist public knowledge and discussion and to help improve the development of sustainable regions. You must not rely on any information contained in this publication without taking specialist advice relevant to your particular circumstances. The Commonwealth of Australia, the Rural Industries Research and Development Corporation (RIRDC), the authors or contributors expressly disclaim, to the maximum extent permitted by law, all responsibility and liability to any person, arising directly or indirectly from any act or omission, or for any consequences of any such act or omission, made in reliance on the contents of this publication, whether or not caused by any negligence on the part of the Commonwealth of Australia, RIRDC, the authors or contributors.

© 2010 Rural Industries Research and Development Corporation. This publication is copyright. Apart from any use as permitted under the Copyright Act 1968, all other rights are reserved. Requests concerning reproduction and rights should be addressed to the RIRDC Publications Manager on phone 02 6271 4165.