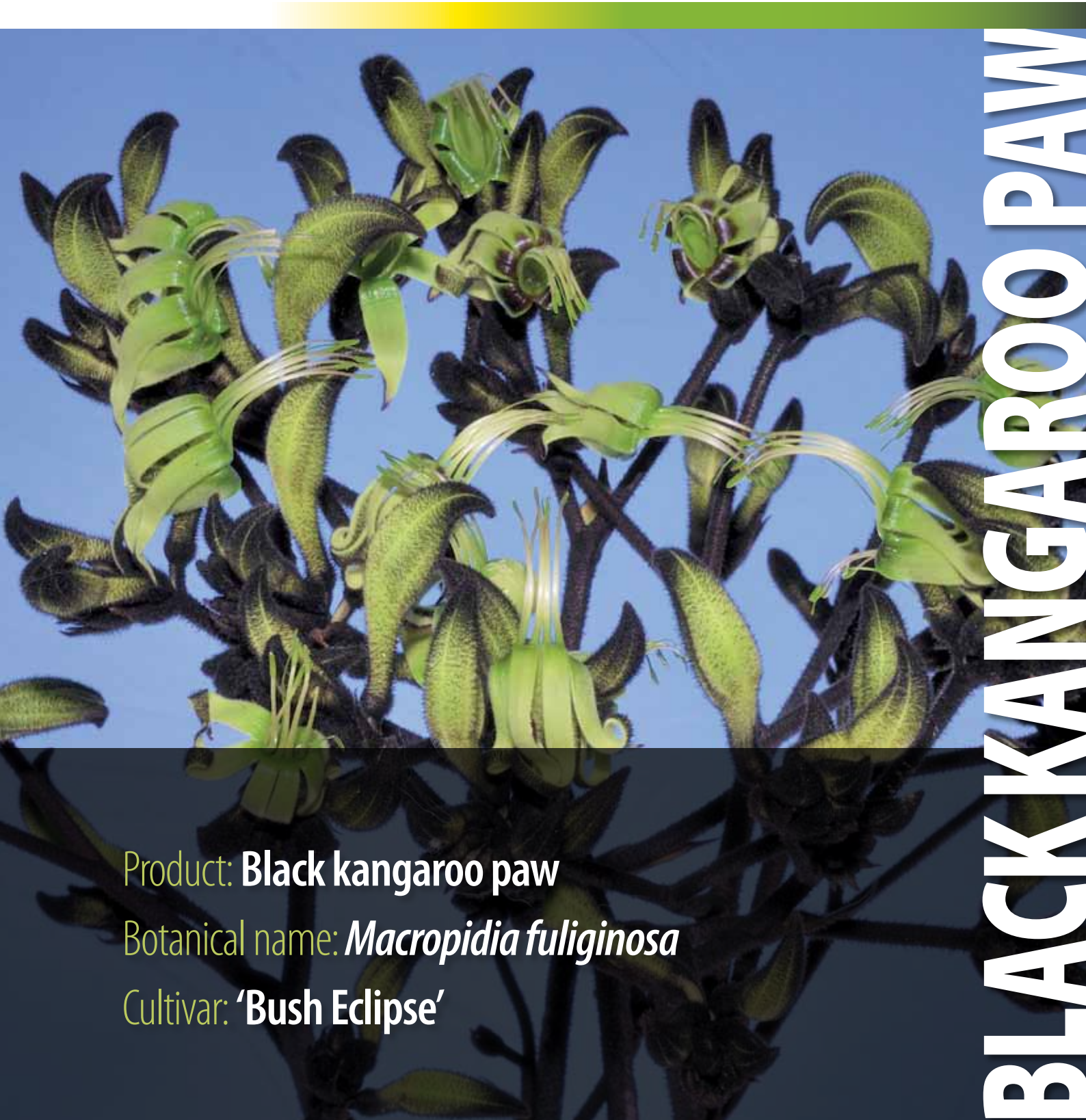




Australian Government
Rural Industries Research and
Development Corporation



BLACK KANGAROO PAW

Product: **Black kangaroo paw**

Botanical name: *Macropidia fuliginosa*

Cultivar: **'Bush Eclipse'**



Industry &
Investment

Quality specifications for
Australian wildflowers

Product: **Black kangaroo paw**
Botanical name: *Macropidia fuliginosa*
Cultivar: 'Bush Eclipse'

***Macropidia fuliginosa*, commonly known as the black kangaroo paw, is in demand for its striking black and lime green flowers.**

Its natural range is the south-west of Western Australia, from just north of Perth to south of Geraldton, where it occupies a different habitat from that of the other kangaroo paws.

Each flower consists of a narrow tube that flares open and then curls and twists inwards, leaving the long stamens extending downwards. Its dense cover of fine, velvety hairs creates the colour. There are various selections and colour variants, some with more black coloration. Selections and cultivars also vary in their branching habit, with some bearing branches of florets along the upper third of the flower stem, while others branch only near the tip.

Macropidia is marketed on both domestic and export markets. Like other kangaroo paws, it is possible to harvest flowers within 6 months of planting, if planted in summer.

Growing *Macropidia* in the eastern states is thought to be difficult on account of the high humidity during the summer flowering period. Extended periods of wet weather can favour the development of ink spot disease, a blackening of the leaves, which is a physiological response to a wide range of stresses rather than the result of one disease organism.

Flowers can also be severely degraded by light frost (-0.5°C), especially in the bud stage.

To overcome these problems, *Macropidia* is often grown in greenhouses in eastern

states. However, flowers on plants grown under cover may be paler owing to the absence of UV light. As a result, *Macropidia* grown under cover may be difficult to sell if field-grown product is available at the same time.

Macropidia plants need a lot of water to help prevent wilting, which results in stem kinking or bending and abortion of flowers.

Stems are generally harvested (for the domestic market) when the first 1 or 2 flowers open. Harvesting at an earlier stage or in bud will cause the immature stems to wilt, producing a condition known as 'bent neck', which is not reversible, and the flowers will fail to open. Generally stems are marketed without foliage.

A sugar pulse is needed for maximum vase life, but too much sugar (>20%) can cause stem collapse.

The black hairs on the flowering stems may cause eye irritation, so it may be appropriate to wear safety glasses during picking and processing.

Macropidia will quickly wilt if allowed to become water stressed, and should be placed in water as soon as possible after harvest. Good hydration must be maintained through to the end consumer.

Flowering season:

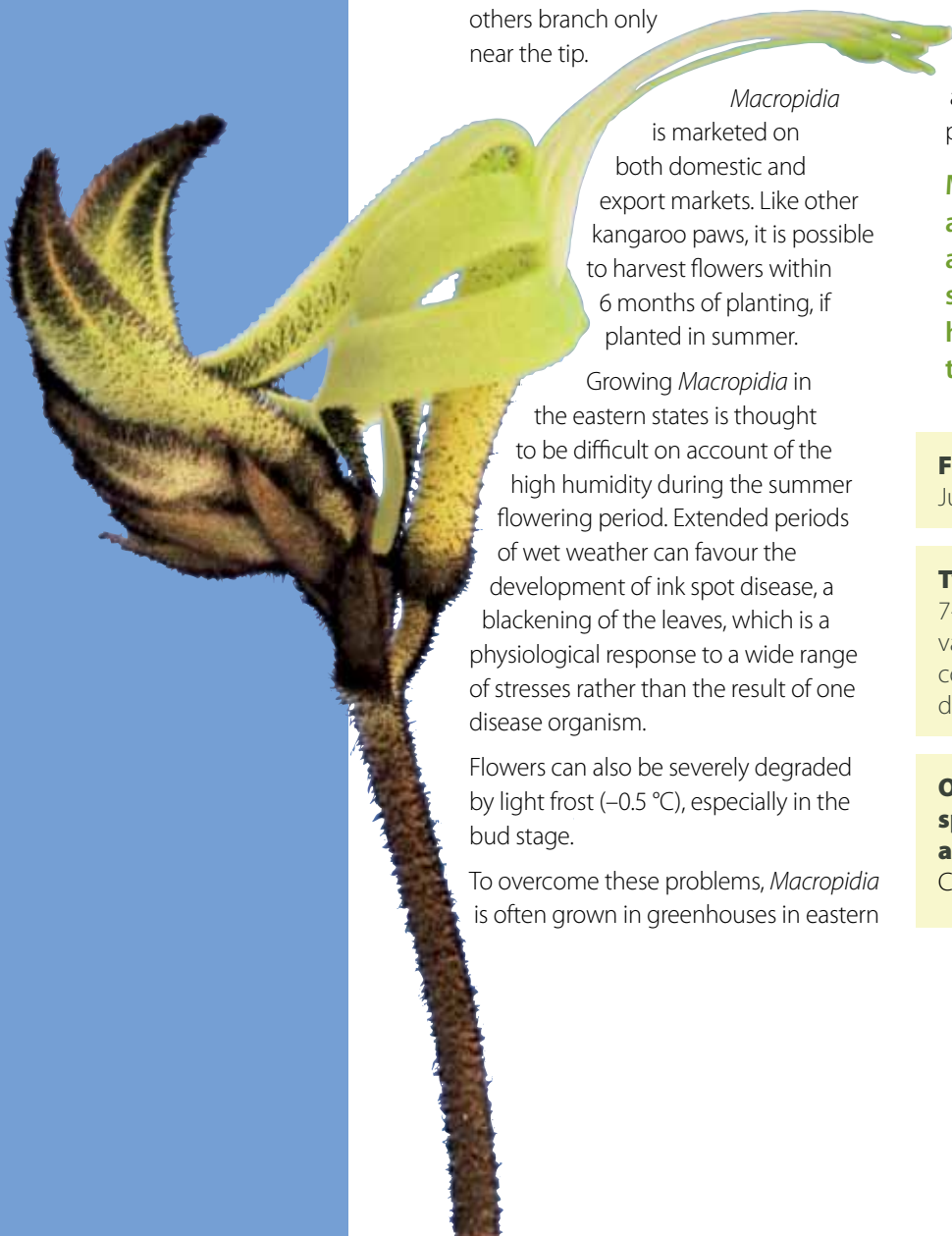
June to November.

Typical postharvest life:

7–21 days. Export can reduce the vase life, especially if the transport conditions are not cold, the product dries out or transport takes too long.

Other products to which this specification can be generally applied:

Cultivars of *Macropidia*.



Product: **Black kangaroo paw**

STAGES OF OPENING



Stage 1
Immature
stage:
unacceptable
to markets
(florets small,
none open)



Stage 2
Early stage:
preferred by
only a few
markets; e.g. for
export markets
(no florets open,
1 floret per
branch swollen)



Stage 3
Ready to
market
(earliest stage
for export):
1 floret per
branch almost
open



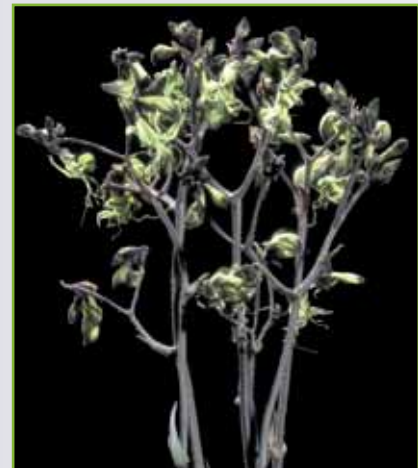
COMMON DEFECTS

Common defects to be avoided at market entry:

- *Twisted or bent stems*
- *Damaged or deformed florets*
- *Wilting (immature product)*
- *Shrivelled or unopened florets*
- *Overmature product*
- *Fungal disease on retained basal leaves*



Wilting flower (too immature)
– do not market



Dried-out product – do not market



Deformed florets – discard



Florets damaged by caterpillar feeding – discard



Aborted florets – 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
Prime stage
for market
(1 floret per
branch open)



Stage 5
Later stage:
suitable for
domestic
market
(2 florets per
branch open)



Stage 6
Mature stage:
unaccepted by
many markets
(>2 florets
open per
branch)



Twisted stem – discard



Ink spot on leaves – ensure product is marketed without full-size leaves at base of stem



Presence of insects (in this case beneficials) – disinfest before marketing



Typical bunches look like this (shown with and without sleeve)

Product: Black kangaroo paw

FLOWERS		GRADING AND BUNCHING					
Appearance	Well-defined lime green and black; not faded.	Grading	Processing can be done before or during pulsing. Reject any contaminated stems. Sort stems according to size (number of branches) and maturity of the flower head.				
When to harvest	When the most mature flower on the stem is about to split open (export); 1–2 flowers open per stem (domestic market). Flowers arranged symmetrically around the stem and pointing upwards. Avoid harvesting when flowers are wet.		Stem length	The number of stems per bunch varies, and is determined by their size, the stem diameter, and market and buyer requirements.			
Damage	No damaged or broken florets or branches. No wilting.	Bunching		Especially for export, stems should be approximately the same diameter within a bunch, with the ends aligned. Prepare bunches to buyer requirements. Different markets require different bunches. Long stems are usually sold in bunches of 5. Recut stems. Tie bunches: use 1 tie near the base and a second tie higher up. Keeping all ties the same distance from the base and using green bunching tape improves presentation. Add sleeves to support bunches. Return bunches to pulsing solution to complete pulse if necessary. Ensure the finished bunches will fit into the box without the heads touching the ends. Trim the stems if necessary.			
Contamination	Product free of grit and soil, weeds or weed seeds, living or dead insects, and signs of insects or spiders, such as webbing.		Stems per bunch	Stem length (cm) for export	Av. no. of stems per bunch	Stem length (cm) for domestic market	Av. no. of stems per bunch
Pests and diseases	No insects, insect damage or disease.			90	5	90	5
LEAVES		80	5	80	5		
Appearance	Remove the basal leaves from marketed stems, leaving the smaller leaves further up the stem.	60	10	35–40	5		
STEMS		<60	As per market requirements				
Appearance	Rigid and strong enough to support blooms. Bend <10°; no kinking or twisting. Ensure stem ends are neatly cut.	Sleeves					
Length	According to market demand. Cut stems at least 5 cm above ground level.	Sleeves (mandatory) help maintain quality and reduce drying out while improving product appearance, making it easier to pack (it is almost impossible to pack unsleeved <i>Macropidia</i>). Use microperforated sleeves, which prevent the formation of condensation. Select the sleeve size to suit the size of the bunch. Use looser sleeves for domestic product to improve presentation. Sleeve at packing stage, after disinfestation.					
RECOMMENDED HANDLING AT HARVEST		Minimise drying out and exposure to heat – pick when it is cool, preferably straight into buckets of clean potable water containing a registered biocide, or put flowers straight into pulsing solution (see below). Move cut stems into shade promptly and then to a cool packing shed. Some growers pick straight into pulsing solution and carry out grading, bunching and sleeving during the pulsing process. Others move stems quickly to the packing shed to be graded, trimmed, bunched and sleeved before placing the bunches into buckets of pulsing solution. (They find dry stems easier to trim and bunch.)					

HOLDING AND STORAGE

Cooling	<p>Effective cooling soon after harvest is important to retaining quality and maximising vase life.</p> <p>Cool, process, cool – for example, remove field heat by cooling flowers immediately on entry into shed to 10 °C in buckets of pulsing 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.</p> <p>Forced-air cooling of packed flowers is ideal for large volumes of product.</p>
Temperature and humidity	2–4 °C (but no colder) in high relative humidity (≥95%) for up to 5 days.
Pulsing	<p><i>Macropidia</i> need a sugar pulse (<20%) to maximise vase life. Check the optimum concentration by doing your own trials – many growers use much less than 20%. (But note that too much sugar, >20%, may cause stem collapse and flower dehydration.)</p> <p>Use clean potable water to make up solutions and add a registered biocide. Pulse for 12 hours at 20–24 °C (packing shed), or longer at 2–4 °C. Note that the pulsing time is related to the concentration of sugar, with a shorter pulsing time for a more concentrated solution.</p> <p>Pulse in cool room if weather is very hot.</p> <p>Prepare fresh pulsing solution for each batch.</p>
Postharvest solutions	<p>Hydration solution: Use a commercial flower preservative solution made up according to the label.</p> <p>Postharvest solution: Same as the hydration solution.</p>
Longer-term storage	<p>Vase life of <i>Macropidia</i> is reduced by cold storage.</p> <p>Aim to send flowers to market the day after they are harvested.</p> <p>Total storage time from harvest to end customer should be <1 week.</p> <p>For longer storage seek professional advice and test in the market before committing product.</p>

PACKAGING

Pack bunches of the same size (stem number or weight, and stem thickness) together.

Put bunches of similar length together, and ensure all bunches meet this specification.

Pack boxes according to customer requirements.

For export, do not pack mixed cultivars in the one box, unless requested.

Pack bunches firmly in boxes so the product will not move and be damaged. Pack head to tail, or use export hooks or stem breaks to ensure the tops of the bunches can't move in transit, or the florets will be damaged or crushed. Do not over-pack.

Use boxes with holes to allow forced-air cooling.

Ensure product is at 2–4 °C on dispatch to market.

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)	<p>Use preharvest fungicide sprays during wet weather to reduce risk of botrytis disease.</p> <p>Use preharvest insecticide sprays to reduce the pest population at harvest.</p> <p>Dip flowers that are to be packaged and held for any significant length of time (export product) in a registered fungicide and insecticide solution with added wetting agent for not less than 1 minute, then dry naturally for 2 hours to ensure thorough disinfestation.</p>
Insects (for export)	
Ethylene sensitivity	<p><i>Macropidia</i> does not appear to be susceptible to ethylene.</p>

Messages for importers and wholesalers

- Recut stems and place into fresh water containing a reputable commercial postharvest solution, registered biocide, and sugar or flower food.
- 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 cut-flower food or a registered biocide and sugar.
- 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 cut-flower food in solutions. Give the customer a sachet of cut-flower food to take home.

Messages for consumers

- Keep vase filled with the correct solution of cut-flower food. Check daily, as flowers can use a lot of water. If cut-flower food is not used, 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.

SUPPORTING INDUSTRY PARTNER:



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