

FACT SHEET

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Government of South Australia
Primary Industries and Resources SA

Muntries production

Introduction

In the wild the muntries plant (*Kunzea pomifera*) occurs as a prostrate or occasionally semi-upright shrub along the southern coast of Australia, with inland extensions, from Portland in Victoria to the Eyre Peninsula and Kangaroo Island in South Australia. It produces clusters of berries, green in colour with a red to purplish tinge at maturity, up to 1 cm or more in diameter, with a spicy-apple flavour. The fruit can be used fresh in desserts and fruit salads, or cooked in pies, chutneys, jams and sweet or savoury sauces.

Most fruit that reaches processors and restaurants (the main markets at present) is harvested from the wild. Market demand for consistent supplies, combined with concerns over the environmental impact of wild harvesting in the often fragile coastal dune systems, means that cultivated plantings are increasing in importance. As cultivated supplies increase a fresh market outlet should also develop for higher quality fruit.

Climatic and soil requirements

The plant seems to prefer a lighter, well drained soil of moderately acid to strongly alkaline pH (6.0 to 8.0). Its wild range suggests that a moderate climate is probably the most suitable, although experience in cultivation suggests the plant possesses some frost tolerance (RIRDC Publication No 04/178).

Canopy management

The plant's prostrate growth habit poses many management problems and training the plant onto a trellis has been successfully tried by several growers. In this system branches are carefully woven through and along trellis wires, each of which are spaced about 10 to 20 cm apart on a 1 metre high vertical trellis. Ties may be used to help maintain form.



Fig 1: Muntrie fruit (Rivoli Bay cultivar [Ⓟ])

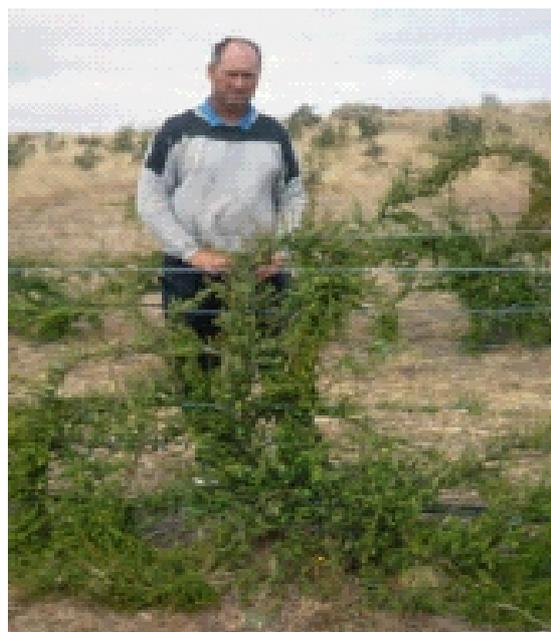


Fig 2: Trellised Muntries plant



Trellised plants are much easier to access for all management operations, including harvesting, and are likely to produce better quality fruit. The system also represents a more efficient use of orchard space and is likely to result in higher per hectare yields when compared to prostrate grown plantings.

Combined with trellising, some winter pruning is likely to be beneficial. Tip pruning may help to thicken stems and reduce elongation. Branch pruning may be required to avoid crowding on trellises, remove older unfruitful wood and help balance vegetative and fruiting behaviour. As more experience is gained with the crop it is likely that more detailed and objective information on pruning techniques will become available to growers.

Orchard layout

The plant spacings discussed below assume a single-plane vertical trellising system and irrigation is employed.

Between-row spacing should be adequate to allow machinery access and is likely to vary from 1.5 to 2 metres if specialised narrow tractors and implements are used and up to 3 or 3.5 metres if using more conventional machinery.

Between-plant spacing within the rows is governed by expected growth rates and how quickly the grower wants to achieve maximum canopy development. Closer spacings will achieve maximum canopy area (and thus maximum yields) earlier in the planting's life, at the expense of greater planting material costs. Conversely, wider plantings will cost less to establish but take longer to achieve maximum canopy development and yields.

It is likely that economics will favour closer within-row spacings, of perhaps around 1.5 metres or even closer between plants.

A very close or 'intensive' planting pattern, of 2 metres between rows and 1 metre between plants, would result in a planting density of 5,000 plants per hectare, while a wider more 'conventional' pattern of 3 metres by 1.5 metres would result in 2,200 plants per hectare.



Fig 3: Muntries orchard

Wind protection

It has been observed that the plant tends to be a poor producer in exposed windy sites, which may be the result of reduced pollinating insect activity under these conditions.

In windy conditions trellised branches are also much more likely to be broken and fruit damaged by rubbing against foliage, branches, trellises, etc.

Therefore adequate wind protection, either from vegetation or artificial windbreaks, is likely to be a fundamental requirement for successful production.

Varieties

Several selections of muntries are reported. The named variety, Rivoli Bay, is no longer protected by Plant Breeders Rights. Rivoli Bay was selected by Australian Native Produce Industries (no longer in operation) on the basis of fruit size, flavour, production, appearance and texture. Rivoli Bay and other selections in cultivation may be available as cuttings from some of the current growers. Plants are also available from selected nurseries but these selections have not been tested for commercial production of fruit.

State Flora, Belair SA 5052. ph: (08) 8278 7777.

Provenance Indigenous Plants: 27 Circuit Drive Hendon SA 5014. ph: (08) 8345 0300.

Water requirements

At the moment there is only limited information available on the water requirements of muntries. Some observations and factors that should be considered are:

- Excessive irrigations, leading to extended periods of waterlogging, should be avoided.
- Extremely dry soil conditions should also be avoided.
- A moderate restriction of water in early spring may be beneficial in stimulating flowering and reducing competitive vegetative growth.
- After flowering, adequate moisture is necessary for fruit growth and development and subsequent vegetative growth.

Most importantly, growers should monitor and record their irrigations and soil moisture status using instruments such as tensiometers. This will help them and their advisors assess their current situation and practices, identify any problems and refine their future management.

Nutrition

As with water requirements, at the moment little is known of the nutrient requirements of muntries. As experience with the crop accumulates firmer guidelines and objective assessment techniques, such as leaf analysis, will become available. Until then, some general principles should be kept in mind when designing a fertilizer program:

- Many Australian native plants are intolerant of high phosphorous levels, so a relatively low P fertilizer, suitable for natives, should probably be used.
- In the first season following establishment the aim should be to maximise growth to develop a good plant structure and produce next season's fruiting wood. Therefore frequent and relatively heavy fertilizer applications, particularly of nitrogen, are probably warranted.
- Once established, restricting nutrient availability may be necessary to avoid excessive vegetative growth in spring and stimulate flowering. Therefore it may be advisable to avoid or restrict fertilizer applications in winter and spring.
- After harvest, vegetative growth, which will form next year's fruiting wood, should be encouraged.
- A complete micronutrient foliar spray may be advisable in autumn.

Pest and diseases

Some plant dieback has been observed, which may be due to soil fungi such as *Pythium* and *Phytophthora*. Good soil drainage should help alleviate the problem and chemical treatments, such as Phosphorous acid, appears to have potential as a control method.

Birds, which commonly damage many berryfruits, are not widespread, but can be a problem in some areas such as Mount Lofty Ranges of SA, where netting of trellises is required.

While other pests, such as lizards and millipedes, are known to graze on prostrate wild plants, the situation with these and other pests and diseases in trellised cultivation is largely unknown at this stage.

Flowering and fruiting

Fruiting occurs on one year old wood, with flower clusters appearing on the end of branches in late spring to early summer. As in many plants, it appears that factors which favour vegetative growth around this time, such as high levels of nutrient and/or water applications, may be detrimental to flowering. A mild moisture stress may even be required to initiate flowering.

Pollination is probably achieved by insects and recent research shows that the plant is self-incompatible. Therefore, commercial production of muntries will require plantings of a number of genetically different varieties to ensure cross-pollination and subsequent fruit development (Dr Tony Page, RIRDC Publication No 03/127).

After fruit set adequate water is required to develop fruit size and quality and prevent fruit drop. Fruit maturity may be achieved as early as December in hotter areas and some growers use the development of a white tinge on the undersides of fruit as an indicator of ripeness.

The optimal time to commence harvest has not yet been determined. Some growers have suggested that green but mature berries have the best taste and texture, while others report an increase in sweetness if left longer. As berries are left they develop a red to purplish colour and the market desirability of this colour change may also ultimately influence harvest timing.

Fruit can remain on the plants for 2 to 3 months and in the wild may be gathered as late as May or June. However, in commercial production the harvest time is likely to be shorter, since older fruit tends to have reduced moisture content, a floury texture and poorer flavour (although this may vary with environmental conditions and soil type).

Following harvest, the branches that bore fruit will commence vegetative growth, which will form the bearing wood for next season's crop.

Harvesting and handling

As with many berry crops, hand harvesting is the most labour intensive management operation and the one that often sets a limit on the size of a planting that can be comfortably handled.

Mechanical harvesting may be feasible, particularly given the fruit's relatively resilient skin, however potentially suitable equipment has not yet been trialed in muntries.

Quality is maintained by harvesting in the morning, when berries are cooler and crisper, and shallow harvest and transport containers should be used to avoid crushing. Immediately after harvest, the berries should be promptly frozen, or alternatively cool storage should be maintained throughout the supply chain, depending on market destination and requirements.

Yields

The currently available yield data for trellised plantings is based on a limited number of growers.

Plants produced from cuttings are likely to bear a small crop in the second year after planting (Ryder and Latham, RIRDC Publication No 04/178) and increase until around year five, or till full trellised canopy development. Figures of around 2.0 kg are obtained for mature plants.

Economics

Fruit price has varied considerably in the past, depending on seasonal conditions. One major processor has paid growers and harvesters \$8 to \$12 per kilogram in an 'average' season. Currently fruit is selling to the foodservice sector for \$17.50 per kilogram from one major wholesaler and \$25.00 to \$35.00 from a second, smaller, supplier. At the retail level, (Mandys Gourmet on 55, Adelaide Central Market) frozen fruit sells for around \$66.00/kg.

Further information

Further information on native crops is contained in the other publications in this series:

Australian Native Citrus – Wild Species, Cultivars and Hybrids

Bush Tomato Production

Miscellaneous Native Food Crops – Davidson and Illawarra Plums

Miscellaneous Native Food Crops – East Coast Tree Species with Potential in SA

Miscellaneous Native Food Crops – Herbs and Vegetables with Potential in SA

Mountain Pepper Production

Native Food Background Notes

Native Food Crops – Frequently Asked Questions

Native Food Crops – Sources of Information

Quandong Production

Sunrise Lime Dieback

The Native Food Industry in SA

Wattleseed Production

These fact sheets are also available for download from the CSIRO Land and Water - Native Foods website at <http://www.clw.csiro.au/nativefoods/crops/index.html>, and the PIRSA site www.pir.sa.gov.au, or from the national Prime Notes CD.

The first edition of "Tastes of Australia: A Directory of the Native Food Industry" was published in 2005 and is available from Tanamera Bush Foods, ph (08) 8383 0374. This directory contains contact details for individuals and groups from all sectors of the native food industry.

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