

Activity # 1- Assessing Horticultural Crop Suitability for the Queensland Murray Darling Basin Study Area

Specific Biophysical Crop Information – Pomegranate

(1 August 2014 to 30 June 2016)

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Citation: Carey, D., Deuter, P., Zull, A., Taylor, H., White, N (2017) High Value Horticulture Value Chains for the Queensland Murray-Darling Basin Project: Activity 1 – Assessing Horticulture Crop Suitability for the Queensland Murray Darling Basin Study Area report. Queensland Government Department of Agriculture and Fisheries.

This publication has been compiled by David Carey of Agri-Science, Department of Agriculture and Fisheries.

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Table of contents

Crop Matrix	4
Biophysical Requirements and Limiting Factors (climate)	5
Temperature.....	5
Soils.....	5
Rainfall	5
Irrigation	5
Potential Australian Pomegranate Production Regions	5
Crop in the QMDB Region.....	6
Pomegranate Varieties	6
Storage	7
References	7

Pomegranate

Based on the biophysical requirements and limiting factors, **Pomegranate is a potential crop** for the Balonne-Border Rivers Region of the QMDB. The **most critical limiting factor** is a reported **undiagnosed disease complex** or disease issue that has caused severe plantation yield decline and **significant plant death** at PMG Agriculture at Condobolin in NSW, where sixty percent of the 120 000 trees planted have been affected by disease and subsequently abandoned. Audio file links below; [ABC News - pomegranate](#).

This “disease” issue appears widespread and has reportedly affected trees in Southern Queensland, New South Wales, Victoria, South Australia and Western Australia.

[ABC News - pomegranate disease](#)

Crop Matrix:-

	Perennial Crop	Pomegranate
Currently Grown (Y/N)	Qld	Y
	QMDB	Y
	NSW	Y
	Vic	Y
Frost Sensitivity (Y/N or Deg C)	Seedling	Y
	Growth	N
	Reproductive	N
Low Temp Sensitivity (Y/N or Deg C)	Seedling	N
	Growth	-9
	Reproductive	Y
High Temp Sensitivity	Seedling	N
	Growth	>30
	Reproductive	N
Rainfall Sensitivity	Y/N	Y
	Growth Phase	Maturation and harvest
Special Soil Requirements	Y/N	N
	Requirement	Well drained
Chilling Req.	Y/N	Y
	(Hours)	100-200
Water Quality	Sensitivity (dS/m)	Will tolerate slightly saline water
Harvest Months	(Months)	April - May
Length of harvest	(Weeks)	8
First Harvest	(Years)	3
Full Production	(Years)	5-6
QMDB	Y/N	Y (refer crop summary)

Biophysical Requirements and Limiting Factors (climate)

Temperature

The most suitable production areas have mild-temperatures to sub-tropical with cool winters and hot, long and dry summers. **Pomegranate is extremely drought tolerant** with some ability to tolerate salty water.

Soils

Pomegranates are adaptable to **wide range of soil types** which can vary from calcareous to alkaline in nature, but should preferably be deep and well drained.

Rainfall

Rainfall in autumn can affect yields as the fruit will crack, this can be a more severe problem when water is short. **Areas that receive regular summer rain are probably not suitable** as potential production zones, as fruit tends to be soft, with poor transport and storage characteristics.

Irrigation

Pomegranates are a deciduous tree, and are **less water demanding than an evergreen perennial like citrus**. Irrigation needs will vary depending on soil, plant density, in crop rainfall and management practices. Pomegranate can withstand periods of drought, but will produce less fruit. To maximise yield adequate soil moisture should be maintained throughout the growing season. Much of the production around the world is not irrigated to full yield potential often receiving only supplemental irrigation. Pomegranates will tolerate brackish water though there will be a yield trade off. From a crop water use perspective it is estimated that **9-12 megalitres per hectare (ML/ha)** is required without any rain. This needs to be further investigated.

Potential Australian Pomegranate Production Regions

A previous report "Pomegranate Preliminary Assessment of the Potential for an Australian Industry (RIRDC publication number 08/153) highlighted potential Australian production locations.



Source - RIRDC publication number 08/153

Crop in the QMDB Region.

Based on the biophysical requirements and limiting factors, Pomegranate has some potential as a crop for the Balonne-Border Rivers Region of the QMDB. The **following risk factors will need to be addressed before any investment in pomegranate production in the study area is contemplated:-**

- Source of germplasm and its authenticity.
- Rain when fruit is mature has the potential to cause fruit splitting.
- Sources of appropriate cultivars to suit the environment.
- Cause of reported widespread tree decline in several states of Australia
- Pomegranates are a host of the QLD fruit fly, creating export market access issues.
- Late frosts

Pomegranate Varieties

The main variety is Pomegranate “Wonderful” with its large well-coloured fruit and the heavy and consistent cropping. Wonderful is self-fertile with the fruit having good juice content and sugar levels. Around the world they quote thousands of types. Various State and Federal research centres brought material into the country in the 1950’s and 1960’s for evaluation. Over time, trees at Stanthorpe QLD, Merbein Vic and Dareton in NSW were removed as funding either dried up or priorities changed.

The term Wonder become generic resulting in anything and everything that resembled a pomegranate being called Wonderful. The biggest problem for existing nurseries supplying trees to growers is having an understanding of what a particular cultivar it really is. Global Plant IP, when reviewing the plant material available, recognised that what was available in Australia, is either not the true Wonderful or could not be validated as being the same, with the possible exception of some material in WA.

The real Wonderful variety was a chance seedling discovered in Florida, and then taken to California where it is now the predominant cultivar. The Pomegranate genetics that are here in Australia already could in fact be Grenada, Early Wonderful, Foot Hills or any one of hundreds of types found around the world. Re-importing new plant material from a modern certified supplier would address this issue very quickly.

The table below lists Pomegranate variety observations from plants at the Western Australian Department of Agriculture and Food, Medina Research Centre in the 1990’s.

Varieties	External appearance	Internal appearance / juiciness, acidity	Comments
Gulosha Azerbaijani	Large size, good external appearance (light pink/red skin).	Large red grains. Juicy.	Good variety.
Gulosha Rosavaya	Large size, good external appearance (light pink skin).	Large, red grains. Juicy.	Best variety for combination of sweetness, acidity and external appearance
Wonderful	Medium size. Claret red skin.	More acidic than Gulosha Rosavaya. Red grains.	Next best variety to Gulosha varieties, but is smaller and more acidic. Most common variety in California. Better for juicing.
Victorian Giant	Large size, not very attractive skin.	Grain is not highly coloured, not juicy, mild flavour.	Poor variety.
Berri	Large size. Skin is not attractive.	Not juicy, too sweet, bland flavour.	Poor variety.
Veles	Large size Claret red skin.	Juicy, rich flavour, but very acidic	May be suitable for processing.
Griffith	Large size Claret red skin.	Red grains, rich flavour, but slightly too acidic	Fairly good variety

Storage

The pomegranate has similar post-harvest storage potential to apples. Harvested fruit is best maintained at a temperature of 0^o-5^o C and may be kept for a period of up to 7 months within this temperature range and at 80 to 85% relative humidity, without shrinking or spoilage.

Note: To better understand the Pomegranate industry potential in the Australian context the following reference document (listed below) should be read. “An R&D Strategy for the Australian Pomegranate Industry”

References

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Disclaimer: The candidate crop information presented in this QMDB study area report (Activity 1) are based on the analysis of the published biophysical needs of the crops (e.g. temperature, frost sensitivity, chill requirement, water quality, etc.) and current climate records for the QMDB study area. The candidate crops are deemed suited to the study area where the biophysical needs are met either year round or for portion of the year and will allow crop production.
