



Pomegranate

– a new option for irrigated areas of the Murray-Darling Basin

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- Pomegranate is a new specialty crop option for irrigators of the southern Murray-Darling Basin.
- Production requirements and management skills are the similar to those required for other horticultural crops.
- A range of market opportunities exists for the fruit from whole fruit export to juicing of split or defective fruit.

The pomegranate (Punica granatum) appears in history as far back as the writings of the Old Testament. Back then very little was really known about the fruit other than it was valued for both health and medicinal purposes by many cultures located around the Mediterranean, central Asia, India and Russia.

Pomegranate is considered as one of the 'old world' fruits along with the likes of figs, grapes and dates. Until recent times its history in Australia has been primarily as a backyard ornamental. Cuttings have come with various waves of migration from the regions mentioned above.

The original source of genetics for the species came from a region covering Iran to the Himalayas in northern India, but it has been grown mainly in the Mediterranean and Middle Eastern regions of the world. Hence pomegranate does well in similar climates in the USA, South America and Australia.

Historical knowledge of the health benefits of pomegranate has inspired a lot of research to better understand the nutritional benefits of the fruit. International research has been funded privately and led predominately by producers in the USA and Israel. Little public research has been done on the production of pomegranates or towards breeding new cultivars. Fortunately, however, some research has been conducted in Australia by various state agricultural departments; and the results have been very useful in the recent establishment of commercial pomegranate orchards in southern Australia.

Australian producers have the opportunity to develop new pomegranate orchards at world's best practice. This means the adoption of pedestrian orchards using trellising that allows for cheaper labour inputs and the introduction of some mechanisation. Potential yields are being pushed higher as we better understand light management, and that leads to higher export pack-outs. All of which makes Australian producers very



Excellent production of the variety Wonderful in Israel, using a T trellis. The climate and conditions in Israel are very similar to many areas of southern Australia.

competitive. This past year has seen 30 t/ha on 3rd leaf (three year old trees) across two varieties. The Israelis are at 40–45 t/ha on 4th leaf trees with the 'real' Wonderful variety, where trellising is employed.

The information in this article comes from knowledge and experience gained from various study trips of pomegranate production from around the world over the last eight years.

Global Plant IP is involved in the development of pomegranate orchards in the Murray-Darling Basin. The primary business of the company is to develop commercialisation models for tree fruit breeders looking to protect the intellectual property (IP) they have created. This involves developing marketing plans, income streams, creating grower clubs, and seeking plant protection across a range of permanently planted trees fruit across the globe.

Previously, I was engaged by the Rural Industry Research & Development Corporation (RIRDC) to identify areas of weakness or unknowns about pomegranate production in Australia, to provide assistance and answer questions for the emerging industry. Although now slightly out of date, a copy of this still useful report is available on the RIRDC website at rirdc.com.au.

It is fair to say that the growers currently growing pomegranate in Australia are active in their perusal of knowledge and most would be at current world best practice.



Craig Heaysman of Comla Farms, Dareton NSW, in a young orchard that was planted in spring 2009 to replace Chardonnay grapes.

Planting regions

So where can we plant pomegranate successfully?

As mentioned pomegranate needs areas that are typically dry all summer long with little incidence of rain as the fruit matures in autumn. We have found that Alice Springs and northwards is just too hot, as the fruit boils on the tree! Colour is also poor in this region.

There has been success at St George Qld for very early fruit production and we are now considering Munduberra in Qld as another growing location. There is some planting on the Lachlan River however river water is required for irrigation and it is proving too unreliable due to low rainfall runoff into storages. Lower down the Lachlan at Hillston, where there is plenty of groundwater, is ideal. The Murrumbidgee downstream of Narranderra which includes the MIA is another very reliable region.

The fruit fly work being done by the citrus industry in the MIA to keep the area free of Queensland fruit fly is to be commended. Any new pomegranate businesses should work with these guys to maintain the fruit fly free status – giving both industries a good strong export advantage. Pomegranate suits vine replacements where grapes are either out of favour or out of contract. At the time of writing, I am only aware of two commercial pomegranate orchards in the MIA.

Pomegranate can be grown in the Murray Valley. There is some early fruit as far down as South Australia. Most existing plantings to date are around Mildura, and there is a little bit in Robinvale. The Mildura growers regularly have farm walks and share ideas amongst themselves. Some small plantings of late fruiting pomegranate have occurred as far east as Cobram.

One of the largest commercial plantings is located at Shepparton, in the Goulburn Valley. The group known as APG or Australian Pomegranate Growers has invested in some value-adding technology and recently launched various consumer products into Coles Supermarkets.

All up, Australia would have about 300–350 hectares planted, which includes a range of varieties.

Varieties

Wonderful

Growers should seek advice and assistance about the material they plan to plant in their region. Having the *right* Wonderful clone is very important. Unscrupulous nursery operators have not identified or sourced what is the correct Wonderful clone.

Changing names and not providing evidence of where plant material has been sourced is a major issue for some of the original orchards planted. Our definition of Wonderful is what most Californian growers have planted – including the largest producer in the world who has about 7500 hectares of this variety.

The only way we could truly confirm we had the right Wonderful was to re-import it from California, four and a half years ago. We then validated this against all the other so called Wonderful types. When juice is extracted they don't match up, fruit is often smaller in size, has different flavour profiles or just does not have the storage life. Wonderful is known globally as one of the leading cultivars and already there are suggestions from people who have bought fruit from Australia that the clones shipped are not the same as what can be found in all major producing areas

of the world. Wonderful is a sweet/sour type with relatively hard seed. Juice and extraction rates are 30–35% by total weight.

So.... identify what clone of Wonderful you are getting and get sound processing data and/or locate the original source of the material.

Rosavaya & Azerbaijani

Both of these varieties have been tested and are well documented in Australia by various government research departments. We still don't understand when they were imported into Australia or exactly where they came from. It has been suggested they were from Azerbaijan. They don't seem to have come from Turkmenistan, which is where Parfianca came from. Both are pink/sweet types with large arils (the fleshy material around each seed) and softer seed. Taste testing with small children indicated Rosavaya was the preferred type despite Azerbaijani out yielding Rosavaya in trials. Aril and juice extraction ratios are much higher than Wonderful for both: 40–45%.

Lost in Action

What we do know is the average fruit weight by ratio of seed/arils can be as high as 50–55%. It is the most standard cultivar in collection of over 1200 cultivars collected by a Russian Scientist Dr Gregory Levin. I imported this variety two years ago and we hope to see the first fruit in Australia this coming summer. It is a sweet/sour type with soft seed. Colour is intense. Both fruit size and productivity when evaluated in other parts of the world are impressive.

Other types

Early Wonderful is of limited importance, it provides an option in a very early area, as a market gap filler.

Other early types just fail in one or two major characteristics. Acco, 128 and 118 which are Wonderful-type clones, either fail



'Lost in Action' is one of the most promising cultivar we have sourced from the Northern Hemisphere. The fruit has great colour both inside and outside, soft aril and flavour very well balanced between sweet and tart.

in juice ratios, or have poor flavour, yield or shelf life. They are being pulled out in Israel and South Africa.

Our investigation and study of any varieties from India concluded that either from a market acceptance or productivity point of view, there is nothing that will stand the test of time.

Irrigation practices

A fully mature grove planted at a high density of 1000–1250 plants per hectare, using some sort of trellis, will use and respond positively (yield wise) to 7–9 ML/ha. The first year this will be 2–3 ML/ha. It has been demonstrated where plastic mulch has been used in the early years of establishment, water savings as high as 25% can be achieved. The side benefit to this is that the weeds can be controlled much easier. These numbers equate to drippers. Over head sprinklers are a "no no" due to the disease pressure they create. Water should be kept close to the ground. Flood irrigation has been used in the first one or two years where cash flow is a problem. Once cropping has commenced it is really important to have good control over your water application so as both flowering and cracking can be managed.

Planting populations

Each grower will need to consider tractor size, previous crop on the block (eg wine grapes), where the existing irrigation risers are, along with what the rest of the orchard is planted at.

New blocks are best to be planted at 1000–1250 trees/ha or spacings of 4 m x 2.0–2.5 m or 5 m x 2.0–2.5 m. There are examples in the world of plantings as high as 1666 trees/ha. Anything less than 1000 trees/ha is going to take longer to come into full production and light management may be compromised due to wider trees.

I am happy to plant any direction. The costs of a few extra trees make up for the additional production when both water and land are scarce.

Pest, weeds & disease issues

Pomegranates are a great host of Queensland fruit fly. This should not be an issue for readers of this magazine.

Right now we have not seen any major insect threat. This does not say that it will not be a problem in the future as more orchards are established and pests soon discover another food source.

Hares generally don't like the bark, kangaroos just keep moving through, rabbits will eat young foliage, and locusts I guess we will find out. Small blocks where bird pressure is high will be attacked – more so by parrots.

Pomegranates are susceptible to various fungal rots so preventative sprays are required from flowering onwards. Rain and ants can move the botrytis spores around. Growers need to ask a local adviser about what is registered for control of fungal disease.

Weeds are hard to control – once again ask a local crop adviser as to what is registered.

Suckering

Suckering is a problem with production. Suckers rob the plant of valuable nutrients. Each variety is different subject to age and the amount of light reaching under the canopy to the base of the plant. Multi-stemmed trunks are much harder to manage.

I encourage growers to only grow one trunk, as your costs will increase with more. Cleaning will need to happen at least twice a year.

Fertiliser


Each grower will understand the various soil types on their own farm. During establishment growers have been applying mulch and gypsum. Fertiliser templates are available for each year from Global Plant IP. Being a red fruit, potassium is important.

Soil tests and regular petiole tests during the cropping stage, when trees reach three years and onwards, are very important.

Marketing the crop

I spend a lot of time talking to potential growers about varieties and making sure you have the right one. If it is wrong, no amount of branding is going to fix the problem. The buyers don't come back.

So firstly understand the characteristics of the variety then understand who it is that you are targeting. All the cultivars I recommend and/or are the most desirable have been evaluated on this premise or belief. They are all multipurpose. The firsts can be packed off for either a domestic or export market. The composites can be used in aril extraction. Anything split or has some internal breakdown needs to be juiced.

Pricing over the last few years has been sensational in comparison with other things. This will not remain the same if we grow cultivars with poor characteristics. It will create a reason to discount. We suggest prospective growers to work with produce companies that are vertically integrated and can deal with your whole crop such as Fresh Produce Group or Global Produce Solutions. They have the critical size to create chain store programs, repack, warehouse and develop marketing plans, under brands with a meaning or vision across both domestic and international markets. 



Australian producers can develop new pomegranate orchards at world's best practice and achieve high yields. In 2009 yields of 30 t/ha were achieved on three year old trees across two varieties.

Further information

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A first leaf orchard of pomegranate that has been established in the MIA.