

Protected Cropping in Polytunnels

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The Australian berry industry has benefited from advances in protected cropping over recent years. Raspberries and blackberries in particular are embracing this move, with many businesses transitioning from an open field environment to protected high tunnels due to key production benefits.

Low-cost structures

The use of polytunnels on a commercial scale for berry production is now a more cost-effective option than it has previously been. These represent a relatively low-cost option compared with traditional greenhouse structures and can be erected for between \$80,000 and \$110,000 per hectare, depending on system, manufacturer and type.

Polytunnels are also very flexible when it comes to size and can be established on most terrain, including undulating sloping ground. They quite often come in kit form and are reasonably easy to assemble using mostly unskilled labour to erect.

Higher crop yield and productivity

Sophisticated hydroponic watering systems have given growers producing in polytunnels more flexibility to optimise yields and quality. Nutrient mixes can be adjusted to the plants requirements and adapted to the various plant growth cycles. Hydroponic systems are also more efficient, utilising up to 70 per cent less water than traditionally grown fruit.

Optimal growing climate

Protected cropping helps maintain a suitable climate to produce berries, helping to minimise wind, rain, and other stresses to the crop. Airflow is one of the most important factors in choosing the type and length of the polytunnel. Raspberries are preferably grown in high tunnels which have enough height to provide good air flow and space for long canes to grow.

To maximise airflow, in most cases, the length of the tunnel should be no more than 100 metres. It is also advantageous to be able to lift the sides of the tunnel to increase airflow during the warmer months and to reduce humidity. During cooler months the ends of the tunnels can be closed off to maintain temperature.

Clean growing conditions

Polytunnels provide a microclimate that, in most cases, is less conducive to pests and disease, reducing the need for chemical applications.

With the extra cost associated with polytunnel production it is important to start with uniform, healthy and disease-free plant material from the nursery. High quality planting material presents better, higher quality and higher yielding crops. The old saying is "the best crop starts at the nursery" and this is particularly important when growing in a protected environment.

Clean, inert and disease-free substrate is also used to ensure soil borne diseases are not transferred. Coco coir is most often used, due to its good air porosity and water holding capacity for plants to thrive. Coir mixes can also be adapted by blending with other substrate materials to make a slightly coarse mix to allow excess moisture to flow through the medium. This approach can be used to make it more suitable for raspberries which don't tolerate over-watering. It is important to use a high-quality coco product preferably buffered to an EC of 0.5 or lower.



Raspberry production in a polytunnel environment. Photo credit: Mark Salter



Set up of Pinata Farms raspberry farm at Orielton. Photo credit: Pinata Farms

Extending the season

Polytunnels provide profitable, functional, and sustainable solutions to maximise cropping areas, lengthen harvest periods and smooth production peaks.

Generally, most growers are using polytunnels to provide a longer production season and extend the marketing shoulder period.

There are a number of ways to extend production in tunnels; in the case of raspberries staging planting and a varietal mix will extend the season.

Also, if using long cane varieties usually kept in a cool store to accumulate chill hours, these can be introduced into the tunnel in stages to further lengthen the season.

Challenges

Protected cropping can increase the financial sustainability of raspberry production, but there are also some challenges which must be managed. In particular, warmer conditions can increase pest and disease pressure and increase the likelihood of outbreaks, making a good pest and disease program essential.

A regular scouting program is a must, as well as a good understanding of the major pests present in the growing environment.

Precise and timely water management is also critical particularly as there is much less room for error. Automation can be a big help here, allowing irrigation and fertigation to reliably occur when scheduled.



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