



Nursery & Garden Industry  
Queensland



*“We wouldn’t have been able to develop our new growing area without the assistance provided by the Farm Management Systems Officer Lex McMullin from NGIQ.  
Bill Dargel 28.2.19*

## Fitzroy Nurseries

### Best Management Practice Growing Area Construction

Fitzroy Nurseries is a third generation nursery located at Pink Lilly on the Fitzroy River near Rockhampton. Fitzroy Nurseries was started in 1953 by Horst Dargel and Bill von Allman, with the Dargels buying out the interests of the von Allmans in the year 2000. Over the years, additional properties were acquired until the total land area was 400 ha, of which 32 ha is devoted to nursery production with a mixture of in-ground and containerised production. The nursery is also accredited under the Nursery Industry Accreditation Scheme Australia

(NIASA). Currently, the nursery is being run by Bill and Peter Dargel, with Horst still very much involved in the day to day operations of the business, with the third generation also learning the nursery business.

Fitzroy Nurseries grow a variety of ornamental plants suited to tropical regions, as well as a wide range of fruit trees, with plants being distributed through their own retail outlet and across Australia, particularly into Western Queensland districts.

As markets and production



# Fitzroy Nurseries BMP Growing Area Construction



*“ Our existing growing areas were state of the art when installed, but as new products and methods have become available we needed to update our systems ”*  
*Bill Dargel 28.2.19*

methods have changed over the years, and with an increase in demand for product, the decision was made to increase the containerised growing area to meet the increasing demand. The existing containerised growing areas had been built with concrete floors, which had proven an effective growing surface over many years, if good levels of hygiene were maintained. The existing growing areas were undercover, with a mixture of either shade cloth or hail protection, but also with an ability to shade specific areas with heavier shade or cover with plastic if required for heating.

The galvanised pipe used for the framework of the original shadehouses was also used as the distribution system for the irrigation. Over time, this has developed into a maintenance problem, as the pipes began to corrode, weakening the structure and causing sprinkler blockages from rust on the inside of the pipes.

The existing growing areas are still used for production, even though they were built in 1973. Because of the long service life of the existing structures, it was decided to construct the new growing areas using the same building method. A few changes were made to the design based on the experiences with the existing structures, but also to take advantage of new materials and products that have become available since the first structures were erected.

For the new growing area, it was decided to continue using concrete as the growing surface, due to its durability and ease of maintenance, even though the cost of this is greater than other Best Management Practice (BMP) growing bed construction. It was also acknowledged that if plants were grown on an impervious surface, such as concrete, the drainage and hygiene practices must be excellent. Consequently, the slope of the floor in the new structure was constructed to ensure excellent drainage, and hygiene practices to keep the floors clean and disinfested between crops have been continued.

The growing structures were built on the same model as the previous design, using galvanised pipe as the

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framework. However, it was decided, using the shadehouse pipe was not going to be used to also carry the irrigation water to the sprinklers. Instead, based on trials with modern sprinklers and BMP irrigation layouts conducted in other parts of the nursery, a system using Antelco Rotormax sprinklers with black jets on a 5 x 5 metre spacing, and operating at 180 kPa was used. From catch can tests conducted after installation, this layout was found to have a Mean Application Rate (MAR) of 17.1 mm/hr (BMP <15 mm/hr), a Coefficient of Uniformity (CU) of 90.1% (BMP >85%) and Scheduling Coefficient (SC) of 1.36 (BMP <1.5).



One of the selling points for Fitzroy Nurseries stock is that it is sun hardened during production, leading to better field establishment. Consequently, heavy shade is generally not used in the final stages of production, even though it may be used during propagation or early growth stages. The covering on the existing structures was a galvanised wire mesh with a poly mesh covering. To give a similar level of light exposure in the new area, a covering of black hail mesh with 30% shade factor was used.



As part of the Rural Water Use Efficiency Irrigation Futures (RWUE-IF) initiative, an assessment was made on the improvements to water use efficiency and productivity made by installing this new area. The growing area was 1000 m<sup>2</sup> in size, which amounted to 3.1% of the entire nursery area. There was a 1.9% reduction in the amount of water

*“From our previous experience we were able to set up the irrigation system in the new area to BMP. We’re delighted with the final result”*

*Bill Dargel 28.2.19*



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pumped for this area compared to the older growing areas. As energy use in this case is directly related to the amount of water pumped, energy use was also reduced by 1.9%, resulting in a \$98/annum overall water and energy cost saving (1%). While the cost savings in water and energy use are not significant, the greatest changes came in improvements to productivity. The new area of 1000 m<sup>2</sup> increased production by \$61565/annum through increases in production, and cost savings from water and energy use. Productivity per megalitre of water increased by \$1051/ML due to the reduction in overall water use and increase in production.

Based on the success of the new area, another growing area of 2000 m<sup>2</sup> has been constructed, and is now in full production. In addition to new growing areas being installed, irrigation retrofits are being applied to existing areas of the nursery as systems wear out or become too difficult to manage, particularly as the pipe frameworks deteriorate to the point where they may fail.



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