CASE STUDY
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Managing water 'critical' to future of nursery industry

Queensland nursery manager Kieran Studders had two simple goals when he first installed the irrigation system on the four-hectare Big Leaf Wholesale Nurseries site at North Arm, near Eumundi – to save time and water.

Three years on and in the second stage of the Queensland government-funded Rural Water Use Efficiency Irrigation Futures initiative, Kieran has achieved a 60 per cent improvement in water use efficiency (WUE).

Mr Studders said managing water well is critical to the future of the nursery industry.

"Without water we're nothing, and while it takes a lot of work to maximise WUE, the benefits far outweigh the negatives," he said.

"It's probably the most important factor for nurseries to address, and I think the money from the pot levy should be used to help implement best management practice (BMP) for irrigation."

Kieran Studders at Big Leaf Wholesale Nurseries, QLD.

Big Leaf's commitment to BMP and improving the uniformity of irrigation application has resulted in a number of other benefits:

- 20 per cent improvement in general crop health with quicker, healthier plant growth
- 25 per cent improvement in crop uniformity
- 15 per cent improvement in crop turn or production
- 7 per cent reduction in throw outs or plant losses.

The nursery requires approximately 73,000 litres of water daily during the warm summer months and this is supplied from a nine megalitre dam on a neighbouring site.

The current crop growing area of 1.5 hectares comprises 2,300m^2 of full sun production, 4,500m^2 of hail netting, 2,000m^2 of 80 per cent shade cloth, 2,600m^2 of 50 per cent shade cloth, 500m^2 of poly covered greenhouse and a 150m^2 propagation facility.

The bulk of Big Leaf's production is in 200mm to 400mm containers and its product range consists of Heliconias, Gingers, Cordylines, Dracaenas, a selection of trees, shrubs and grasses, and foliage lines including Calathea, Strelitzia, Philodendrons, Aspleniums, Spathiphyllum and Spathoglos.

Crops are produced in a variety of growing areas including gravel, hard stand and raised benches, all constructed to nursery production BMP standards.

Installing irrigation systems to industry BMP, a variable speed drive pumping system, larger irrigation zones, consolidating plants with like water use together, the purchase of an irrigation controller and the use of a rain sensor have all contributed to substantial water and energy savings.

The nursery is equipped with overhead irrigation systems utilising Nelson S10, Nelson R10 turbo, Antelco Rotormax, and inverted Naandan green swivel sprinklers and on-site 'catchcan' assessments are conducted to ensure they operate to maximum efficiency.

While a Hunter I-Core 48 station irrigation controller is currently used for scheduling, Mr Studders said they're investigating a more sophisticated controller that incorporates a weather station and also provides remote access and fault reporting.

"The irrigation controller will probably also integrate with a fertigation system, which allows us to fertilize and put water-soluble products through the irrigation," he said.

"It's a big move so a lot of research is necessary, particularly since we're still in a construction phase and building growing areas at the moment.

"It doesn't matter ho much product you've grown in the past, when you come to a new site you're dealing with new micro climates, so you have to be as water-savvy as possible."

Water is pumped from the storage dam through an upgraded 90mm supply line into four 30,000 litre storage tanks. The dam water is disinfested using sodium hypochlorite and three Toro F-600 media/sand filters are used to remove any impurities, including organic particles, to ensure the water is suitable for nursery irrigation.

Two Lowara 15SV variable frequency drive pumps provide pressure and flow across the nursery, irrigating each of the growing areas via a 63mm main line. Growing areas are located at various elevations, with the corresponding number of sprinklers and sprinkler types requiring different flows and pressures.

Location of the nursery industry's Portable Weight Based Scheduling Unit, PWBSU, on-site provided valuable data on the relationship between irrigation scheduling and growing media and a water meter provides accurate water use data.

Mr Studders said improving WUE in a production nursery begins with having a clear understanding of the infrastructure and practices currently in place, something which Big Leaf achieved when it was selected to be part of the Queensland Government's Rural Water Use Efficiency Irrigation Futures initiative.

The nursery completed an IDEMP – Irrigation, Drainage and Energy Management Plan – and worked with a farm management systems officer to focus on potting mixes and irrigation to improve water use efficiency.

"That information was invaluable. It showed us how important it is to review irrigation systems and do a catch can test, that shows the uniformity of the irrigation system or lack of it – there's information on how to do this on the NGIA website," Mr Studders said.

"Even the types of pump have an impact – variable speed pumps have a sliding scale of electricity use depending on amount of water they're pushing."

The IDEMP outlined opportunities, suggestions and designs for on-farm improvements to ensure its profitability and sustainability.

"The project has given us a look at our strengths and weaknesses but it also showed the Government that the Queensland nursery industry is a responsible user of water and considers the environment," Mr Studders said.

"In nursery we do a lot of work based on gut feeling. We have a rain sensor and sometimes I'll override that because it might be overcast and I water a bit less, or the soil moisture may not be right.

"The data from the portable scheduling unit shows if I'm in the recommended parameters of moisture for potting mix and if I'm making the right decisions and I am, I'm 100 per cent keeping product at optimum levels with over-watering.

"The problem with over watering is you're leaching water from pots and wasting money, and by making that more efficient we also reduce nitrates and phosphates into waterways."

For the next 12 months MR Studders be working with farm management systems officer Lex McMullin on plans to continue site upgrades. With a potential 4 - 5000 square metres of growing area to come under irrigation in time, Big Leaf's short to medium term plans include investigating the use of onsite bores and nursery waste water recycling, and investing in a second irrigation pump to provide backup security.

Mr Studders, who owns the nursery in partnership with Greg and Jackie Phillpott and is a former board member of Nursery & Garden Industry Queensland (NGIQ), said his advice to other nursery operators would be 'take note of technology and take the time to research your options'.

"Nursery people are very busy – it's pretty easy to work seven days a week and sometimes we know we should be doing things but don't find the time. Be prepared to shut down and sort out anything that's an issue," he said.

"There's plenty of information to use on the NGIA website and we've had a lot of positive feedback from a field day we ran here earlier in the year.

"Getting involved in BMP can inspire and motivate you to keep on achieving."

ENDS.

For more information, visit the Nursery Production Farm Management System (FMS) website http://nurseryproductionfms.com.au/

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