RURAL WATER USE EFFICIENCY IRRIGATION FUTURES

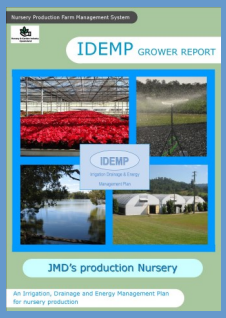
Improving irrigation management for a profitable and sustainable future

Queensland Government

Supported by the Qld Government
Department of Natural Resources and Mines

Irrigation, Drainage & Energy Management Plans (IDEMP) describe the infrastructure and management practices in operation at a production nursery and outline plans, designs, suggestions and opportunities for on-farm system and equipment improvements and upgrades.

IDEMPs support growers in nursery production to address both economic and environmental issues relating to water access, recycling, storage and use to ensure the business remains profitable and sustainable into the future.



IDEMP
Irrigation Drainage & Energy Management Plan

Nursery & Garden Industry Queensland

The Pipeline

An electronic update on Nursery Production RWUE-IF project activities

Nursery Production Rural Water Use Efficiency—Irrigation Futures (NGIQ RWUE-IF)

IN THIS PIPELINE

VIDEO

Managing Water Storage Water Quality - https://youtu.be/X8tSWdmHVug

Managing Water Storage Water Quality Case Study - https://youtu.be/xzuDNpFR7P8

Big Leaf Wholesale Nursery FMS Field Day

A total of 67 participants attended the most recent Nursery Production, Rural Water Use Efficiency – Irrigation Futures (RWUE-IF) event was the Farm Management System Field Day held in March at Big Leaf Wholesale Nurseries at North Arm on the Sunshine Coast focussing on water use efficiency in nursery production.

The Field Day began with an opportunity for participants to network with speakers and their peers over a cup of coffee and breakfast roll sponsored by Garden City Plastics.

Steve Hart then introduced the speaker program beginning with Kieran Studders, one of the owners of Big Leaf Wholesale Nurseries, who welcomed everyone and provided some background to the nursery development journey to this point in time along with plans for the future. Kieran spoke of embracing the best management program concept within NIASA as the framework for progress and site development.

NGIQ executive officer Kerry Battersby was the next speaker, thanking the Big Leaf Wholesale Nursery team for hosting the event, and encouraging all those attending to gain as much as possible from their attendance and ask many questions.

Dr Sam Stacey from the ICL group travelled from Sydney to be the first technical speaker on the program. Dr Stacey presented information on the use of wetting agents in growing media within nursery production, to improve water use efficiency, and reduce irrigation water use. Dr Stacey also provided data on Hydraflo®2 field trials along with highlighting the benefits of both liquid and granular products.

Daniel Parsons from Transplant Systems Pty Ltd in Melbourne, was the next speaker to present the latest in mechanisation and nursery equipment. Daniel provided an overview of currently available equipment in Australia and some of the exciting products soon to find their way to local producers.

Georgina Davis from the Queensland Farmers Federation (QFF) was next to present vital information for growers on the planning framework for water resources in Queensland and identified a number of web links to water planning information. Georgina spoke to the audience on some of the specific requirements under the Moreton Water Plan.

Morning tea sponsored by Bassett Barks provided another opportunity attendees to network and ask questions of the presenters.

Dan Papacek of Bugs for Bugs provided the audience with a wealth of information to manage on-farm pest and disease issues and reduce pesticide use by implementing Integrated

IDEMP Video and Technical Information

For an introduction to IDEMPs go to the following link to see a video explaining more—http://youtu.be/1YQXpO6IBYQ . For technical information visit the NGIQ Technical Information Library at https://www.ngiq.asn.au/resources/technical-information/

Pest Management (IPM) and the use of biological organisms. Dan's display of biological organisms was very popular during the break.

Sue Joseph of Bassett Barks spoke on the business of producing growing media blends for nursery production. Sue talked about the current and future opportunities, possibilities and problems in growing media production and the difficulties in sourcing raw materials.

Nigel Read of Aqua-Power irrigation in Nambour provided an overview of the entire irrigation system installed at Big Leaf Wholesale Nurseries and the reasons behind many of the equipment decisions.

The Farm Management System Field Day event concluded with a nursery tour hosted by one of the business owners Kieran Studders. The nursery tour highlighted the development of the site to industry best management practice standards and the benefits the business has obtained from participation in the RWUE-IF initiative.

Water Balances

Throughout Queensland and indeed throughout Australia, water availability has been in question as a result of recent drought periods, water quality in many waterways and, in some localities, over allocation of the resource. It is anticipated that there will continue to be less water available for agriculture and in particular nursery production due to:

- Increasing population pressure and competition for the water resource in peri-urban areas, where the bulk of nursery production is located.
- Changing weather patterns. Across many areas of Queensland the temperature and rainfall cycle appears to have altered in recent years. The occurrence of more intense but less frequent rain events has lead to greatly reduced ground or soil infiltration and increased runoff.
- Local authorities continuing to develop 'Catchment Management Plans' to address water quality and ecosystem health for each waterway in their locality. These plans are designed to manage both water use and the wastewater quality returning to the system.
- Reviews of water access, allocations and entitlements in many areas across Queensland.

Effective production and expansion planning is not feasible without some knowledge of current and future water requirements. Contingency planning for dry years and drought periods is not possible without an understanding of the production water use requirements. It is difficult to communicate with government or local authorities for water allocations or water access, if a history of production irrigation requirements for a business is not available. Financial institutions are more comfortable in lending money if business sustainability can be documented. Local authorities often require documentation on sustainability and catchment interaction when reviewing site approval for development or construction of structures.

Water available for production and irrigation can be calculated and compared against rainfall data from normal and dry years to identify any shortfalls that may occur. This is particularly important when planning for expansion phases within a business. Water security should be addressed as part of physical or production expansion planning.

Crop water use: Water meters installed in the irrigation system can quickly and simply provide water use data for a growing season or production year. This information can often include both the crop irrigation along with other nursery water use such as washing and cleaning of beds, benches and containers. Where a water meter is not installed it is possible to calculate water use by measuring the volume of water emitted by one sprinkler in an irrigation zone, multiplying by the number of sprinklers in that zone, and then smultiplying by the duration the irrigation zone is operated in a year. The results from each irrigation zone can be totaled, and then added to the calculated water volume used in general hosing and cleaning in a similar time frame, providing a measure of the total water used in production in a growing season or production year.

Available water: Reticulated town water supply has a direct cost, underground water has to be brought to the surface and distributed around the nursery, and surface water has to be stored, pumped and disinfested. Town water supplies may be limited by restrictions on 'time of day' use, supply due to service pipe size, restriction on volumes available for general horticulture, and seasonal restrictions due to local conditions such as drought. Underground water may be limited by the volume of water available due to climatic conditions, local pumping competition, the aquifer recharge time, or by the water quality and the need for treating or blending the water to make it suitable for use. Surface water in storages is restricted by the physical catchment and collection infrastructure, storage volume, storage water quality, weather conditions, losses due to evaporation and seepage, recycling efficiency and filtration and disinfestation capabilities.

Water conservation: A number of actions can be taken to improve water security in nursery production.

1. Calculate current and future water requirements to allow sensible production planning.
2. Install an efficient drainage system to maximize drainage capture.
3. Recycle nursery wastewater back onto production areas with appropriate disinfestation.
4. Improve water use efficiency of on-farm irrigation infrastructure.
   - improve irrigation application systems to industry BMP
   - upgrade application systems to more efficient methods e.g. drip.
   - adjust plant spacing
   - group like water use plants together in an irrigation zone
   - adjust growing media e.g. add water holding materials
5. Improve on-farm practices to improve irrigation efficiency
   - improve irrigation scheduling.
   - consolidate plants in zones or blocks during sales periods to facilitate turning off irrigation in areas not in use.

In the Pipeline for May/June 2017

- Sunshine Coast, Brisbane, Gold Coast, Lockyer Valley - IDEMP development site visits.
- Final report for project.