The Pipeline

An electronic update on Nursery Production RWUE-IF project activities

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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.

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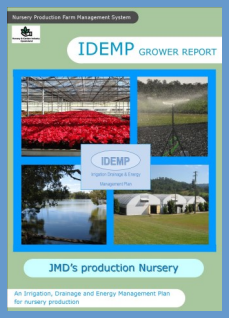

Nursery Production Rural Water Use Efficiency—Irrigation Futures (NGIQ RWUE-IF)

In September and October the Nursery & Garden Industry Queensland Rural Water Use Efficiency Initiate Irrigation Futures (NGIQ RWUE-IF) team have been planning field days and workshops, visiting growers business' in North Queensland to continue the development of their Irrigation and Drainage Management Plans (IDEMP). More growers in South East Queensland have come on board by completing their grower surveys, and some of the mapping data for these businesses has been collected.

In North Queensland, Steve has visited those businesses that had a preliminary IDEMP in the Mackay and Wet Tropics areas, collecting further data to complete their Interim IDEMP and helping with their irrigation layouts.

For those businesses who have signed on to have an IDEMP created, preliminary IDEMPs have been completed, and these will continue to be worked on into the future

Over the next two months we'll be introducing more growers to Irrigation Drainage and Energy Management Plans, conducting forums, running a WaterWork workshop, bringing more businesses on board with the project and gathering data for preliminary IDEMPs.

DATE CLAIMERS
We'll be conducting a WaterWork's Workshop at Fernland Agencies on the Sunshine Coast on November 12th.

IDEMP Video and Technical Information

For an introduction to IDEMPs go to the following link to see a video explaining more—http://www.ngiq.asn.au/technical-information/?did=252. For technical information visit the NGIQ Technical Information Library at www.ngiq.asn.au/technical-information or click on the centre icon on the home page.

Regional Visits and Event Reports

Plants Whitsunday -Cannon Valley

Mackay/Whitsunday Grower Visits

NGIQ Farm Management System Officer (FMSO), Steve Hart traveled to the Mackay region of North Queensland in the last week of September to further develop IDEMP's for growers participating in the project. Steve worked with growers to identify opportunities for on-farm change to improve water and energy efficiencies. A large amount of time was spent col-

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IRRIGATION FUTURES
Improving irrigation management for a profitable and sustainable future

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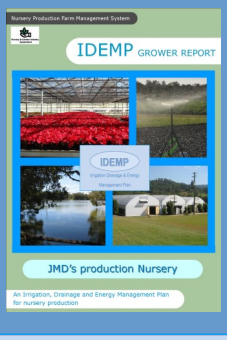

IDEMP
Irrigation Drainage & Energy Management Plan

Nursery & Garden Industry Queensland

lecting production nursery mapping information, sampling water quality, monitoring irrigation system operation, and conducting irrigation catch can assessments. A number of Best Management Practice (BMP) audits were also conducted to identify opportunities for site improvements. The data and information gathered will be processed by FMSO Lex McMullin and included in each individual production nursery IDEMP.

Mackay Plant Wholesalers - Rural View

Mad About Plants Wholesale Nursery - Edmonton

North Queensland Grower Visits

During the first week of October, Steve Hart travelled to the Atherton Tablelands in North Queensland, and then onto Edmonton on the coast, just south of Cairns, to work with growers participating in the NGIQ RWUE-IF initiative to further develop their IDEMPs. Steve conducted a number of irrigation catch can assessments, to identify for growers the opportunities for improving water use efficiencies through system adjustments, or changes to existing infrastructure. This information is included in each individual business IDEMP report. Growers were again encouraged to obtain irrigation water quality information, by sampling their water source and sending the sample to a laboratory for testing. Regular sampling is providing a snapshot of the water quality and changes that are occurring seasonally or over time. Onsite infrastructure was assessed on many sites, and in some instances data was provided on alternative water and/or energy efficient systems or equipment.

Anza Nursery - Irrigation catch can

Farm Management Systems Field Day - Heaton's Nursery

Forty-six participants attended the 'Nursery Production Farm Management System Field Day' held recently at Heatons Nursery, Burnside Road Nambour on Thursday October 16. The field day event was organised under the NGIQ RWUE-IF initiative which is a partnership between the Nursery & Garden Industry Queensland (NGIQ) and the Queensland Government to provide services to the nursery industry.

The field day program commenced with an introduction from Farm Management Systems Officer (FMSO) Steve Hart, followed by a welcome and brief nursery history presented by business owner, Peter Heaton. The formal programme followed with the first speaker Bede Miller from Powerplants providing information on the range of climate control options Powerplants has available, including screens, vents, fans, structures and control systems. Daniel Ranten and Andrew McKay travelled from Melbourne to present a range of filtration options suitable for applications within the nursery industry. A selection of the filtration equipment

available from the Winnow Group was displayed throughout the field day event. Variable Frequency Drive (VFD) pumping was the focus of the presentation from Peter Chadband from The Pump House. Peter explained the operation of VFD pumps and how they could be utilised in production nurseries, to provide efficient pumping solutions. Leon Melvin and Stephen Kay from Dowdens Pumping & Water Treatment focused on ultra filtration as a disinfestation option, and also as a support pre-filtration system for Reverse Osmosis (RO). The Ultra-filtration and reverse osmosis units brought along by Leon and Stephen generated plenty of discussion among the field day attendees. Final speaker for the afternoon was FMSO Lex McMullin, who provided a detailed account of the disinfestation systems approved under the Nursery Industry Accreditation Scheme Australia (NIASA), and an estimate of the capital and operational costs of each system. The final item on the field day program was a guided tour of the operational areas of Heatons Nursery by Peter Heaton and Gaven Potter, who provided an insight into the process of producing their high-quality and respected product range.

Gaven Potter - Heaton's Nursery with some of the field day participants

Feedback provided, indicates participants found the field day experience highly valuable in providing a variety of information and a choice of contacts that should prove extremely useful over time.

Irrigation Scheduling Basics

Plants require different amounts of water depending on environmental conditions, plant type and plant size. Many nurseries just water to keep their plants alive, and this usually this means the plants that have the highest water requirement dictate the irrigation schedule for the other plants in the same area.

Daily fluctuations in weather conditions can vary up to 300 percent in summer, and, in winter, plants can sometimes go for days without irrigation. If the irrigation schedule is not adjusted to take these variations into account, water use will be excessive, leading to leaching of nutrients, poor plant growth, leaf drop, poor internode spacing, excessive drainage and elevated or contaminated water tables.

The amount of water used by a plant depends on solar radiation, temperature, wind and humidity. If there is not enough water available, or it becomes too hard to extract from the growing media, then the plant stops growing and starts to wilt. If this occurs on a regular basis, then your bottom line is being affected by poor plant growth and too many throwouts.

Plants in the open, which are exposed to full sunlight and wind, will use more water than plants under shade cloth, where solar radiation, temperature and wind are all reduced. Plants in poly or glass houses can experience higher temperatures and humidity, but are exposed to less radiation and wind, and will generally use less water than plants outside in summer. However, the opposite could be the case in winter and during periods of wet weather.

Therefore, to determine the optimum irrigation schedule, the daily evaporation at the production nursery and the amount of water the plants are using needs to be measured.

To apply the correct amount of water to achieve an appropriate level of leaching, and not overwater the plants, an objective means of determining irrigation scheduling needs to be employed. Using automatic weather stations, measuring daily evaporation, and weighing containers are methods that can be used to determine irrigation scheduling.

Weather station

There are many automatic weather stations now available that will calculate evaporation and provide it on a daily basis. Alternatively, a Class A evaporation pan could be installed to measure the previous day's evaporation first thing in the morning, before setting the irrigations. Another, but less accurate alternative, is to download the daily evaporation from the web – internet sites where this information can be found are:
http://www.australianweathernews.com/forecast_OCF.htm and http://www.bom.gov.au/climate/dwo/IDCJDW0400.shtml.

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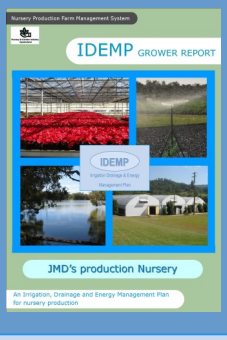

IDEMP
Irrigation Drainage & Energy Management Plan

Nursery & Garden Industry Queensland

Once the daily evaporation has been determined, the irrigation time can be adjusted by using the budgeting function on the irrigation controller. For example, you might set the controller to apply 10mm at the 100 percent setting. If the evaporation rate is multiplied by 10, this gives the percentage setting to set the controller to e.g. 5mm x 10 = 50%. On a cool day, the evaporation may only be 3mm, so by changing the percentage adjustment setting to 30 percent, all blocks will get the required amount of water. If it is a hot dry day and the evaporation is 10mm, then the setting is adjusted to 100 percent.

Irrigation Controller - Palmwood Tropicals

Some simple measurements taken at various stages of plant development will give you an understanding of the range of water requirements across your nursery. To begin measuring the actual water use of your plants, follow these steps:

- Select the container size and plant that is going to dictate the irrigation frequency for each block.
- Once the containers are at their maximum water holding capacity, weigh a representative sample of the pots (containing plants) that have received the average application rate for these blocks.
- Before you next irrigate, weigh the same containers to determine the water (weight) loss. The amount of water lost in millimeters can then be calculated from Table 1.

Container size (mm)	Weight loss (g) for 1mm of water
80	5
100	10
150	20
170	25
200	30
250	50
300	70

Table 1: Water Loss for pot size

By measuring and recording the weights of a range of plants and containers in various blocks within the production nursery, you can start to group plants into areas with similar water requirements. This information can also be used to schedule the irrigation e.g. if a 100mm pot has lost 50g of weight this is equivalent to 5mm of irrigation. Checking plant water requirements over the growing cycle of the crop, over a number of years will develop a picture for the full range of plants grown. For more detail refer to the Nursery Paper "Scheduling Irrigation to Maximise Efficiency" August 2006.

In the Pipeline for November/ December 2014

Over November and December we'll be in the following areas conducting the following activities: Contact us if you'd like to be involved in any of these.

- Lockyer Valley - IDEMP audits- Steve
- Contacting and sending surveys to businesses who have registered interest in having an IDEMP completed
- Producing a video on coir growing media
- WaterWork workshop on the Sunshine Coast
- NGIQ RWUE-IF introductory forum—November Brisbane Trade Day.
- Technical articles for the Leaflet magazine.