



Improving irrigation management
for a profitable and sustainable future

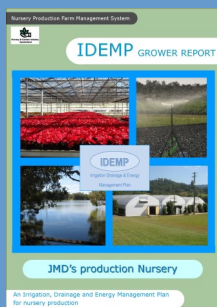


Queensland Government

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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

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

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DATE CLAIMERS
NGIQ Nutrition work-
shop 29/10/15
Sunshine Coast Field
Day 11/11/15

Pump Performance Monitoring

Many growers have commented during recent site visits that their irrigation pumping system may not be delivering the same performance as when the storage dam was full a couple of months back, or when the system was initially installed. There can be many reasons for a change of performance in a pumping system, and regular monitoring is extremely important to quickly identify any pumping performance issues before they lead to more expensive outcomes, such as total pump breakdown or crop losses.

On-site changes to pipe configuration because of upgrades or repairs, pipe blockages or damage, along with irrigation block/zone changes to the sprinkler type and number or nozzles can adversely affect pump performance. Low water levels in dams and bores can lead to irrigation pumping issues due to the extra height the water has to be lifted. Low water levels may also cause a reduction in water quality as pump intakes draw water from lower in the water column.

Total water use records provide the opportunity to compare current water use volumes against historical water use to identify any increase or decrease in volumes used. System pressure can be regularly monitored at each irrigation block to identify fluctuations that can adversely affect performance. Irrigation 'catchcan' tests can also be conducted on individual blocks or zones and compared against previous results to identify any performance variations. All performance issues

identified through on-site monitoring should be investigated to prevent the issue escalating into more serious problems. Prior to contacting an irrigation pumping expert to address the issue, potential sources of the problem should first be investigated.

On the intake or suction side of the pump:

- check that the suction/intake line is not damaged or leaking
- ensure the foot valve is seated properly
- ensure the intake screen is free of debris
- check the level of the water in the bore or dam.

On the pump:

- check for any leaks
- check for unusual noise or vibrations
- check operating pressure.



Variable Speed Pump Set

On the discharge or pressure side of the pump:

- check if any changes to the distribution pipe-work has occurred
- ensure the filter is clean and, if installed, the backwash is operating as designed
- clean the filter screens on each sprinkler (if installed)
- check if any changes to sprinklers, nozzles or jets has occurred
- ensure each solenoid valve opens and closes fully and promptly
- ensure extra sprinklers or laterals have not been included in the system.

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.

Pump Troubleshooting

Your irrigation pump stops pumping. What's your first reaction? Reach for the phone and call your friendly irrigation repairer? Sometimes a systematic approach to diagnosing developing or crisis problems can pay dividends in minimising down time. The following is a guide identifying common pumping problems. You may even be able to fix the problem without the need to contact a professional.

Technical articles on pumping and irrigation in nursery production can be found by visiting the NGIQ website (<http://www.ngiq.asn.au/>) and the 'Nursery Production Technical Information Library' page (<http://www.ngiq.asn.au/technical-information/>) and typing 'pump' in the 'search downloads' box in the top right of the page.

Problem	Possible Cause	Possible Remedy
Pump noisy and vibrating	Misalignment of pump shaft	Determine the cause and repair misalignment
	Pump/motor coupling faulty	Replace the coupling
	Cavitation	Determine the cause of the cavitation
	Clogging of the pump	Remove material blocking the pump
	Worn or dry bearings	Replace or lubricate
	Water hammer	Check pipe sizing, closing of valves and pressure tank pressures
	Pump mountings loose	Check pump foundations and pipe supports
Pump doesn't start	Motor problem -shaft is hard to turn by hand, pump turns easily	Check motor bearings
	Pump problem - shaft is hard to turn but the motor rotates easily	Check pump bearings, or pump impeller for clogging
	Shaft is easy to turn by hand	Check the wiring, pump controller and power supply
No water being pumped	Loss of prime	Prime pump and determine cause of lost prime - cavitation, leaking suction or leaks at the pump
	Required head too high	Review irrigation design and modify to reduce head.
	Suction lift too high	Review suction design to reduce lift
	Air leak in suction line	Identify source of air leak and repair
	Suction pipe or foot valve clogged	Unclog the foot valve and identify source of clogging
Low pump output	Pump not primed properly	Prime pump
	Pump running in reverse	Check direction of rotation of the motor
	Pump speed too low	Check electricity supply
	Required head too high	Review irrigation design and modify to reduce head
	Suction lift too high	Review suction design to reduce lift
	Air leak in suction pipe	Identify source of air leak and repair
	Wrong foot valve size	Check suction design
	Wrong foot valve submergence	Check depth of foot valve
Low pressure	Pump speed too low	Check electricity supply
	Pump running in reverse	Check direction of rotation of motor
	Air in water	Check for air leaks or cavitation
	Wrong impeller diameter	Review pump duty and match to system requirements
	Pump wear or impeller damage	Check pump components for wear or damage
Too much power used	Pump speed too high	Review pumping requirements
	Mechanical defect e.g. bearings	Check and replace worn or damaged components
Pump works, then stops	Air pocket in suction pipe	Check for air leaks or cavitation
	Suction lift too high	Review suction design to reduce lift
	Wear in stuffing box	Check and replace worn or damaged components

In the Pipeline for September/ October 2015

- Burnett/ Wide Bay, Sunshine Coast, Brisbane, Gold Coast and Lockyer Valley - IDEMP development
- North Queensland visits—Steve Hart 7-25th October
- NGIQ Nutrition workshop—29/10/15
- Sunshine Coast Field Day—11/11/15
- Waterwork workshop—TBA

