



Nursery & Garden Industry  
Queensland

## Ensuring the irrigation system operates efficiently in nursery production

*To ensure an irrigation system continues to operate efficiently, as designed and installed in a production nursery, it is vitally important to regularly maintain the system.*

Whether it is an overhead, drip, boom, bottom-up, or capillary irrigation system, a maintenance plan should be in place.

A well-considered maintenance plan will include some or all of the following; regular visual inspections of the irrigation system both operating and not, scheduled full system performance evaluations, regular pressure testing at the pump and irrigation zones, sprinkler alignment checks, emitter nozzle cleaning, filter backwashing and cleaning, main and lateral line flushing, and irrigation water quality testing.

Regular monitoring of the irrigation system is the prime component in a comprehensive maintenance plan and can assist in detecting system problems, emerging performance issues and identify any requirement for further maintenance, system upgrade or repairs. Irrigation system audits conducted on overhead and drip irrigation systems in production nurseries under the Rural Water Use Efficiency – Irrigation Futures (RWUE-IF) initiative have identified poor performance from some irrigation systems, caused by issues such as poor filter operation, competing irrigation events, faulty solenoids, damaged main lines, reduced pump performance, blocked nozzles, incorrect sprinklers, and wrongly adjusted taps or gate valves.

These problems could have been identified and rectified much earlier, maintaining an efficient

irrigation system, had an effective maintenance plan been in place.

Filtration systems require regular maintenance, including filter backwashing and cleaning.

Monitoring pressure differential between the filter inlet and outlet can quickly identify the need for maintenance activities. Screen, disc and media filters require regular cleaning or backwashing, even those with automated backwash facilities. Automated filter backwashing activated by time or flow volumes often require more frequent cleaning, particularly when the irrigation water quality changes due to weather events or on-farm activities. The sand, gravel or other media contained in media filters, requires replacing at intervals as shown in the user manual or identified by the supplier or installer.

Most emitters used in nursery production are designed and manufactured to perform to specifications when operated within a specific pressure and flow range. The irrigation system must meet these pressure and flow requirements when initially installed and throughout the entire life of the system to deliver the uniform irrigation application. Regular testing of the system pressure at each irrigation zone provides an indication of current system performance and recording these results can highlight trends, or identify any deterioration in performance over time.

Under the Nursery Production Farm Management System, the environmental management program EcoHort recommends growers should test the irrigation line pressures monthly.

Having the irrigation system designed, installed and operating to industry best management practice (BMP), ensures the system is capable of irrigating uniformly at an application rate the growing media can absorb. System operation to industry BMP permits the system to be monitored for continued performance over time. Three simple parameters benchmark an irrigation system to BMP in nursery production; Mean Application Rate (MAR), Co-efficient of Uniformity (CU) and Scheduling Co-efficient (CU).

It is recommended within the EcoHort guidelines that the full irrigation system performance be tested against industry BMP parameters and results recorded at six month intervals. This can be achieved by conducting a catch can evaluation of the irrigation system.

Monitoring the total irrigation water use each month can provide an early indication of any issues with the irrigation system. Monthly water usage above or below the monthly average may indicate an emerging problem providing the opportunity to manage the problem before it becomes greater and leads to crop losses. The EcoHort program recommends that total irrigation water use be monitored monthly.

The sprinkler risers and droppers in each irrigation zone should be inspected regularly to ensure they are secured in place as originally installed. The irrigation sprinkler riser can sometimes be bent at various angles caused by on-farm activities including impact with trolleys and trailers. Inverted sprinklers inserted into the laterals may not hang down as installed due to lateral pipe twist over time. Sprinkler systems that are not aligned correctly will not provide a uniform irrigation application as designed and installed.

When purchasing replacement sprinklers or drippers from a reseller, be sure to check each emitter before leaving the store, as often these emitters are mixed in the box or tray as customers scramble to find the one they are searching for. Placing the incorrect emitter that does not match with the others into an irrigation zone will not provide a uniform irrigation application. Sprinklers in the field should be checked for correct installation if performance is not to specification.

Further information on managing an irrigation system can be found in the text 'Managing water in plant nurseries'.

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