



Nursery & Garden Industry  
Queensland

# Best Management Practice Irrigation Benchmarks

Most nursery operators would define an efficient irrigation system as one that waters their plants evenly, with a minimum of hand watering being required. The nursery industry has developed benchmarks that define an efficient irrigation system based on a standard test, allowing systems to be compared against the benchmarks.

Poor design and operation of irrigation systems may result in excessive water and nutrient use, contaminated water resources and unacceptable plant quality. Future or continued access to water resources may require enterprises to demonstrate a history of responsible and efficient water use, with their irrigation systems operating to industry best management practice. Evaluating your irrigation system and making any necessary changes demonstrates a responsible attitude to your Natural Resource Management.

A catch can test can be used to determine the efficiency of an irrigation system. The following link goes to a video showing how to conduct a catch can test—[http://youtu.be/b\\_ZLI4mSfv8](http://youtu.be/b_ZLI4mSfv8). From the data collected, three numbers are calculated and these can be compared against Nursery Irrigation Best Management Practice benchmarks.

**Mean Application Rate (MAR)** is the rate at which the water is applied to the growing media. Growing media is only able to absorb water up to a maximum rate, and any water applied in excess of this rate will flow through the media, and not be absorbed. For bark growing media, a rate of up to 15mm/hr is acceptable but, if a wetting agent is used, application rates can be increased to 20mm/hr. If coir is added to the growing media, the acceptable rate is up to 25mm/hr. Ensuring the MAR is less than the absorption rate of the growing media will take full advantage of the media's water holding capacity. The MAR can also be used to calculate how long to run the irrigation for if the amount of water to be applied is known.

Many variables can affect the absorption rate of growing media such as the physical components, the air-filled porosity, the addition of wetting agents and polymer gels and irrigation scheduling techniques.

**Coefficient of Uniformity (Cu)** is a measure of the overall uniformity of the irrigation layout. The more uniform the application the less time the system needs to be run to fully irrigate the driest container in the area. The best management practice benchmark for Cu is a result greater than 85% for an existing system, but for a new system a result of greater than 90% is desirable.

**Scheduling Coefficient (Sc)** indicates the additional time that an irrigation system needs to run to irrigate the driest container in the area. Best management practice is for the Sc to be below 1.5 for an existing system, and below 1.3 for a new system. This number only refers to a relative time the irrigation needs to run for, not a specific number of minutes. For example, if a system has an Sc of 1.5, and the system needs to be run for 20 minutes to irrigate the average container, it will need to be run for 30 minutes to wet up the driest container (20 minutes x 1.5 Sc).

Higher benchmark figures quoted for new systems allow a margin for decline in performance as the system ages.

More information on efficient irrigation systems can be obtained by attending 'Waterwork' workshops which provide skills and tools to allow growers to plan their irrigation system requirements with their local irrigation outlets.

The Nursery and Garden Industry also has a number publications on irrigation system design and management:

- 'Managing Water in Plant Nurseries' information on nursery irrigation, drainage and water recycling in containerised plant nurseries.
- 'Nursery Industry Water Management Best Practice Guidelines' available as a free download from the NGIA website.
- Technical fact sheets and Nursery Papers,—e.g. 'Designing a BMP irrigation system'.

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