



One of the hardest container crop management facets to teach is how to irrigate effectively and economically.

Those of you who are adept in the skill have usually developed the talent, almost sub-consciously, over many years.

You draw on a vast experience of reading the weather signs, empathizing with the specific needs of a vast range of plant types, adjusting inputs relative to crop maturity and a plethora of other influencing factors.

In short, a massive calculation involving a sizeable amount of information, followed by some highly subjective judgment.

So, who decides when to water, how much and how often for your crop?

Let's review the issues and develop an action plan.

### ***The function of irrigation***

1. To replace moisture loss in the root zone through utilization (transpiration) and evaporation.
2. To cool the root zone.
3. To maintain a safe soluble salts' level (conductivity) in the root zone.

In addition, water is required to dissolve fertilisers so that roots can absorb them.

### ***Key influencing factors for irrigation requirement.***

1. Atmosphere and climatic. Light intensity, day length, relative humidity, wind velocity and ambient temperature.
2. Cultural practice. Potting media, pot size, plant subject and stage of maturity.

### ***Irrigation techniques.***

Overhead, in pot dripper and capillary systems are all popular but require different management. Know your potting mix.

Mixes in New Zealand have evolved along the lines of being more free draining, more aerated and less moisture retentive. They are tuned to overhead irrigation systems. Their current physical characteristics are designed to shed excess rainfall and allow irrigation management to err on the side of more. Over supply, being easier to gauge and allowing for a root zone cooling strategy, running excess freely to waste rather than risking water logging.

### ***The compromises and consequences are:***

High relative water use, nutrient leaching, more temperature volatility in the root zone temperature.

### ***How much is enough?***

Irrigate to restore container capacity plus at least 10% more run to waste.

### ***How often?***

Irrigate when the moisture content in the root zone falls to 60% of that at container capacity.

### ***When?***

The time of day you irrigate will influence root zone temperature, so, in principle, water soon after dawn in Spring and early Summer to minimize the chilling effect. In high Summer irrigate later in the day to cool the roots and limit the terminal temperature in the root zone.

I realize that overhead irrigation later in the day in Summer will result in loss to evaporation even before it reaches the crop. This loss is, however, offset by the savings you have made through accurately assessing and applying just the right amount of water and reduces root stress due to high root zone temperatures.

### ***Application methods.***

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1. Overhead
2. In pot dipper
3. Capillary

**Overhead systems** need setting up. Use a professionally calibrated rain gauge to check both the rate and uniformity of the overhead applied irrigation. Either alter the sprinkler type or number to adjust the delivery pattern or, at the least, note dry or wet zones for the future placement of plant species best suited to those conditions. Measure and record the volume applied by the system for a given run time.

**In pot dripper systems** are accurate and efficient. They are expensive to set up and maintain. Choose the drip nozzles carefully. The type that can be independently shut off are best. These can be shut off if a plant is taken out of the line and will avoid water waste. Be aware that some require more pressure to operate, successfully, (low level spray types) than others. Those that do drip may need to be used in multiples in larger pots to achieve uniform wetting of the whole container.

A useful trick to prevent water 'tracking' straight through the pot without wetting all the mix is to put a handful of sand under the dripper. The water is spread out over the sand before going down into the root zone. Moisture conservation can be achieved by applying a mulch, organic or synthetic, to the top of the pots.

**Capillary systems** are the most efficient and effective of all. However provision should always be made to enable you to apply water overhead on to capillary irrigated crops. This overhead application is used to leach away damaging salts build-up, which occurs in prolonged rain free spells. The cost to set up these systems is high.

Crops do however, respond very well to this irrigation method. It is very water efficient, does not rely on constant management inputs, is fertiliser efficient and discourages weed growth on the top of the pot.

Make sure that your water delivery to a capillary mat system is able to respond quickly enough. Any drying back or out completely negates the benefits of the 'ad lib' supply concept. Often the matting material used is too thin and holds little moisture in reserve. Use top quality, thicker, matting.

A capillary sand bed is superior to a capillary mat in so much as the sand bed can be used to pull out water from rain soaked pots. It is likely to last longer too! Potting mix physical make up should be tuned to the special requirements of a capillary system. Special pots are also used which will give a capillary connection through their base.

***Still not sure how to use your irrigation?***

Call us. We can discuss your specific requirements and circumstances, help you with the various measurements and supply you with the best tools to monitor and manage your irrigation.

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