

## NURSERY 'KNOW HOW' : #2 TESTING INPUTS

KNOW HOW  
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This article is limited in scope to containerized production of ornamentals using controlled release fertiliser in soil-less potting mix.

I make no excuse for this as this is the custom and practice of ornamentals' production, in the main, in New Zealand today.

Measuring crop inputs is a fundamental management function which enables you to produce efficiently, consistently and safely.

### **The 3 main reasons for testing:**

*Problem solving*

*Quality optimization and maintenance*

*Establishing bench mark data*

As you all know, the symptoms of over watering a crop can be easily confused with those associated with under watering. Nutrient deficiency or toxicity symptoms similarly are easily confused. Testing enables us to more accurately differentiate.

A simple and quick salinity test of the potting mix will soon identify the difference.

Fine tuning the fertiliser inputs and modifying them during culture in consideration of the growing conditions is both practical and desirable.

Of great significance is deciding when the original charge of incorporated fertiliser is exhausted.

All too often this is only acted upon when the plant loses colour and vigour. A simple test with comparison and an interpretation method is a powerful tool for production optimization.

Correct timing of the supplementary nutrient charge, usually top dressed, is vital for quality continuity, maintenance and economic production. Measuring the pH of a potting mix will allow us to monitor any pH drift. This can and does occur much more frequently than most growers acknowledge. pH drift can result in nutrient lock-up and consequent deficiencies. By measuring the nutrient content of a potting mix or plant tissue of the ideal crop, we can establish bench mark data by which to compare any subsequent crop/s grown under the same production regime.

As I understand it, most growers currently test, especially plant tissue, entirely for the purpose of problem diagnosis. This is often frustrated by the fact that so little data exists for so called normal plants of the same type.

The answer lies in building up a data base for the plants that are important to your business and being grown in the production system used. In New Zealand we have no Government funded research or extension service devoted to this aim, so you are on your own.

### **Who should do the testing?**

Testing can be conducted at two levels:

1. By a specialist commercial laboratory.
2. By testing yourself, on site.

Tests conducted in the lab. are more wide ranging and offer greater accuracy, but at the cost of time and money.

On site testing, whilst limited in scope and accuracy, can produce useful results quickly and very economically. Ec and pH meters are essential. We sell them!

### **What should you test?**

Potting mix, irrigation water and plant tissue.

In practical terms, on site testing is limited to Ec. (conductivity) and pH of potting mix, fertigation solutions and irrigation water.

The value of this information, however, should not be underestimated as it forms the very foundation for consistently producing quality plants.

A specialist laboratory should be used to confirm your own results periodically and to extend the depth of findings for diagnostics and bench marking purposes.

The irrigation supply if from a bore should be tested every six months as it has been known for quality to vary with the season and to deteriorate over time.

A lab test will

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relate hardness as well as pH.

This detail will be essential if correction is required. Tissue analysis of stock plants, those you propagate from, can be especially useful. Some species e.g. Lavender and Pittosporum have been known to be Calcium deficient. If you can manage the nutrition of your stock plants then periodically testing will help you produce the best propagation material.

### Frequency of testing

Test every batch of potting mix, home made or bought in, using your own test kit for Ec. and pH. If an abnormal result pops up, a lab. test may be justified. Stored potting mix containing controlled release fertiliser should be tested to ensure safe salinity levels are not exceeded.

To establish good bench marking data and to predict how long the fertiliser in the mix will last may involve testing monthly. I recommend that your irrigation water is tested annually by a lab. and 3-4 times a year using your own on site test kit.

### Sampling techniques.

When collecting material to be tested it is vital to have a consistent technique. Potting mix from a bulk heap should be collected as at least 20 sub-samples, handfuls, which are then gently mixed in a clean bucket. From this volume either draw off the 100ml required for on site testing or 1ltr to send on to the lab.

Sampling from a container crop in situ requires a different approach.

If possible take off the pot and take a small amount of mix from the root ball about half way down the pot. Avoid sampling pots on the outer edge of the bed.

At least 20 such samples should be gathered and mixed together before submitting for testing. Do not gather samples immediately after rainfall or irrigation unless you wish to confirm an Ec. reduction after having remedied a salts accumulation problem by leaching. When sampling leaf tissue choose the most recently expanded, mature leaves. You will need at least 70 leaves, from a species with medium sized leaves. Avoid sampling recently fungicide treated leaves or if this is unavoidable make a diary note as to which spray had been used and when.

Commercial laboratories such as R.J. Hill in Hamilton will provide sampling kits and guidance to assist you.

### How to use the results

Interpretation of your results is the least understood factor in the equation. Most commercial labs. are not equipped to offer interpretations simply because they only see the samples submitted and not the circumstances of production. Their skills and expertise is almost always limited to the accurate production of results consistently. Interpretation needs a vast practical experience and excellent reference data derived from the same climate and cultural system being employed by you.

McHort specialize in providing this type of help, but need you to provide the data. Equip your business with the basic testing tools and invest in some tuition on how to use them.

Start to collect base data from crops currently in production , make observations and record the specifics of potting mix inputs, production and potting dates, etc. along with your test results.

Need help? Call me, I shall be in your area soon.

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