

NURSERY 'KNOW HOW' : #5 Crop monitoring



3. Rainfall/irrigation volume and frequency

Measure using a professionally calibrated rain gauge. A free standing, mobile, model can be positioned in amongst your crop to catch irrigation. Know exactly how much volume you are applying over what run time. Dry or over- wet zones, can be identified by repositioning the rain gauge once base data has been collected in the original location. Be aware that significant changes to your potting mix; i.e. altering the percentages of peat, bark or pumice will require alteration to your irrigation management.

Irrigate your container crop at or before the mix is 60% moisture depleted. Replenish to Container Capacity + 10%. Over-drain can be measured by putting the container into an over sized poly bag and clipping or taping the outer bag to the rim of the growing container. Any irrigation over and above that required to restore Container Capacity will be found trapped between the two.

4. Growing media Ec. (conductivity) and pH Measure using Eutech Ec. and pH meters and a simple sample preparation technique and testing protocol. The results are virtually instantaneous and inexpensive.

Monitoring the Ec. of in-situ container crops gives a valuable insight into nutrient availability and especially excess which might injure roots. Tracking media pH can show the effects of an acidifying fertiliser or hard water irrigation. Ec. can be used as a predictive tool to determine remaining coated type fertiliser longevity.

Establish a bench-mark by grinding up a 100ml sample of fresh mix and testing the Ec. produced. Compare this result with a recovered 100 ml sample from an in use mix. The fresh mix result is the 100% potential nutrient yield expressed in Ec. A simple calculation will identify how much remains in the in use mix.

5. Crop growth rate and sale ability

Measure using a photographic record. Make up a background board, white with some bold target markings for reference points. Select the same plant for monthly photos throughout production of the crop. Shoot the plant in 'Birds eye' and profile views using a marker pole to show height gain. Place a natural green colour swatch between the subject's leaves and the white background to monitor leaf colour. The monthly progress of your target plant will be obvious and recorded in a fast and durable way. Continue the system and build up a photographic and data "Blue print" of crop production for the future. Collect leaf analysis results of your best ever crop to reinforce this data.

6. Insect identification and population

Measure using Sticky card traps, yellow or blue, installed 150cm above your crop. Use 1 card / 4sq. m in propagation and 1/ 15-20 sq m in growing on houses.

Check the cards every 3-4 days and mark trapped insects with a dot from a bold marker pen. Use a magnifying glass to identify the stuck insects. Population fluctuations can be read in conjunction with the pesticide application record to confirm effectiveness.

Correlation and interpretation:

Gather your data diligently, read records in conjunction with one another and you will build a more detailed picture of the production environment and your management effect on it.

McHort can assist by supplying monitoring equipment and designing a monitoring strategy especially for you.
Call Donald today to discuss your requirements.

McHort, McPherson Horticulture

Mobile: 021 782250

Email: info@mchort.co.nz

www.mchort.co.nz

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They say 'information is power' and I'm in no doubt that quality data collection and correlation can advance our knowledge of plant production management.

Given this I'm concerned by the apparent lack of interest and activity in this vital area and wonder why. Is it too complicated or expensive or are growers unsure as to how to start?

Below, I suggest strategies and systems by which you can gather useful crop and environmental data in a relevant form which will empower your management and result in making better crop production decisions.

My approach is simple so that you will understand, sustain and administer the system with ease. Delegation of certain tasks is envisaged and indeed involvement of your staff is often highly beneficial. Harness their skills and enthusiasm and through their greater understanding of production challenges, you will reap big rewards from more motivated, satisfied workers, better crops and reduced costs.

I shall start with basics, keep the technical jargon to the minimum and allow you to develop the concept to whatever level suits you. It is intended as a foundation upon which you should build. Let me introduce the concept that 5 main factors in the production mix really influence plant growth. These are, in the simplest terms, the **BIG 5**:

LIGHT, HEAT, WATER, NUTRIENT and AIR

My maxim in developing this strategy is:

'If you can't measure it, you can't manage it'

So, with that in mind, we rationalise which factors we can control or influence before we start trying to measure them. For example, if you grow outdoor crops the value in measuring light levels is limited, simply because it would be unrealistic to supplement light. Yes, it would be, and is, different if you grow annual seedlings under glass when extra lighting in Spring may be considered beneficial, even essential.

So the message is, measure what is relevant to your particular cropping regime and environment. For now, I shall focus on the four remaining factors and then apply 6 fundamentals of measuring and monitoring.

These are:

Air temperature

Root zone temperature

Rainfall/irrigation volume and frequency

Growing media Ec (conductivity) and pH

Crop growth rate and sales appeal

Insect identification and population

All are highly relevant to production success, all link back to the **BIG 5**.

Avoid the mistake of setting unrealistic data collection goals. Too much data can confuse. Start modestly and build progressively. Remember the information gathered is supplementary to your daily observations and existing knowledge.

At best it will highlight trends and confirm, or otherwise, the effectiveness of your management inputs.

Let's then review the 6 fundamentals in turn.

1. Air temperature. Measure using a Quick set max.-min. thermometer. Establish monitoring sites in protected cropping areas, under shade and outdoors. Read the thermometers daily, ideally at the same time each day, and remember to reset them.

The data collected will help you understand the specific micro climates in which you grow, see the contrast between environments and map the progression of the seasons.

2. Root zone temperature. Measure using special soil thermometers. Insert them so that the tip is in the centre of the host root zone. Use in the same site, in the selected production environment, even if and when the crop changes. Mark the monitoring station with a white painted stake for ease of identification. This will give consistency and continuity of data. Protect the soil thermometer with an oversized plastic pipe sleeve. This will shield the indicator, red, spirit and preventing it from being bleached colourless. Plant species' response to root zone temperature varies. Some plants will not actively grow at less than 15° C; others lose roots at just 26° C. Irrigation is a valuable tool for cooling roots, but the effect is double edged and chilling may also slow growth rate.

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