POTTING MEDIA

Potting Media have been analysed by Hill Laboratories for many years. Although there are similarities with conventional soil testing, there are also significant differences. By their nature, Potting Media present some special challenges.

Background

Sonneveld developed the 1:1.5 media to water extraction in Holland in the early 1970's. Subsequent to this Munoo Prasad and Mike Spiers at the Levin Horticultural Research Centre (LHRC) undertook a considerable amount of Potting Media research during the late 1970's and early 1980's. This work provided the basis for routine Potting Media analysis in New Zealand, and made a significant contribution to the development of the Australian Standard for Potting Media Analysis by Kevin Handreck. This Standard also provided additional test procedures not previously offered in New Zealand.

Sampling Directions

1. Take at least 15 to 20 sub-samples from sites representative of the area concerned.
2. Approximately 0.5 litre of mix should be submitted for analysis. If trace elements are also required please submit 1 litre of mix (minimum).
3. Avoid contamination of samples by using clean sampling equipment and new plastic bags.
4. Send samples to the laboratory as soon after collection as possible. Do not allow mixes to incubate in moist conditions for long periods prior to delivery to the laboratory.
5. Where intensive cropping is involved, it may be advisable to monitor nutrient levels by sending samples for analysis every 3 to 6 weeks.
6. If a nutritional problem is suspected, plant tissue samples should be taken in conjunction with mix samples.
7. If diagnosing a specific problem, select the sample from the pots showing the most prominent symptoms.

Basic Media (BM)

Almost all the media received at this laboratory are analysed for the Basic Media Test. This includes pH and Electrical Conductivity, and the immediately available nutrients ammonium-nitrogen, nitrate-nitrogen, phosphorus, sulphur, potassium, calcium, magnesium and sodium.

The pH and EC tests are most important. The pH will affect the availability of many nutrients and should be maintained in the optimum range. The EC provides an overall measurement of the dissolved salts, and is important in diagnosing problems such as salt stress in crops.

It is important to realise that this test measures the nutrients that are immediately plant available. It does not include nutrients that may become available over time (e.g. from slow release fertiliser prills). Consequently it is possible that a Potting Media analysis shows only low levels of nutrients present, even though the crop is apparently growing well. When this is the case, the crop is taking up these nutrients at the same rate as they are being released by slow release fertilizers.

Heavy watering/leaching of the media just prior to testing may also result in low nutrient levels.

Because of these factors, the levels reported should be regarded as a snap-shot of the media at the time of analysis. The treatment given to the media before or after analysis must be taken into account when interpreting the analysis results.

Category	Code	Nutrient Levels
General	M1	Broad range
Seedlings	M2	Very low
Slow Growing Ornamentals	M3	Low
Fast Growing Ornamentals	M4	High
Vegetables	M5	High

Clients submitting samples for analysis should specify which of these categories apply, giving either the category or the code. If this is not done, then the default will be General (M1).

Interpretation data

Desirable pH, soluble salts and nutrient levels vary with the glasshouse crop being grown and management practices. General guidelines are suggested in the table opposite:

	Low (M2)	Fairly Low (M3)	Broad Range (M1)	Medium (M4)	High (M5)
pH	5.2 - 6.5	5.2 - 6.5	5.2 - 6.5	5.2 - 6.5	5.2 - 6.5
Conductivity (mS/cm)	0.3 - 0.8	0.5 - 1.2	0.5 - 1.8	1.0 - 1.8	1.0 - 2.5
Nitrate-N (mg/l)	15 - 35	20 - 50	20 - 80	40 - 80	40 - 120
Ammonium-N (mg/l)	1 - 10	1 - 15	1 - 20	3 - 20	1 - 30
Phosphorus (mg/l)	4 - 15	5 - 15	5 - 20	10 - 20	10 - 30
Potassium (mg/l)	10 - 35	20 - 50	20 - 80	40 - 80	40 - 120
Calcium (mg/l)	10 - 20	15 - 40	30 - 70	30 - 70	30 - 100
Magnesium (mg/l)	8 - 15	6 - 15	7 - 25	12 - 25	12 - 35
Sodium (mg/l)	3 - 25	5 - 30	5 - 40	10 - 40	5 - 10

Additional tests

- **Trace Elements**

The trace elements iron, manganese, zinc, copper and boron are analysed from the DTPA extraction. As with soil trace element testing, there are limitations to the reliability of the test, and in most instances suspected trace element problems should be confirmed with plant tissue analysis.

Generalised interpretation data

	Medium Range
Iron (mg/l)	20.0 - 50.0
Manganese (mg/l)	1.0 - 15.0
Zinc (mg/l)	0.3 - 10.0
Copper (mg/l)	0.4 - 10.0
Boron (mg/l)	0.10 - 0.65

References

i) Sonneveld, C.; van den Ende, J.; van Dijk, P.A.(1974): Analysis of Growing Media by Means of a 1:1.5 Volume Extract. Comm. in Soil Science and Plant Analysis, 5(3), 183-202.

ii) Prasad, M.; Spiers, M.; Ravenwood, I.C. (1981): Soil Testing of Horticultural Substrates (I) Evaluation of 1:1.5 Water Extract for Nitrogen. Comm. in Soil Science and Plant Analysis, 12(9), 811-824.

iii) Thomas, M.B. and Spurway, M.I. A Review of Factors Influencing Organic Matter Decomposition and Nitrogen Immobilisation in Container Media. Combined Proceedings International Plant Propagators Society, Vol 48, 1998. p66 – 71