NURSERY 'KNOW HOW' :

#4 FERTILISERS IN POTTING MIXES

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The challenge.

Feeding plants in a container using a soil-less potting mix is a precise task. The plant must have all it needs within the contained root run and it must ideally remain available for at least the duration of the production phase.

Fertiliser types described.

'Controlled release' fertilisers have revolutionized container culture. Many fertilisers justifiably claim to be 'controlled release' and yet the range of formulation chemistry across the various brands is significantly different. Essentially we tend to describe this whole group as being slow release fertilisers.

The release mechanisms.

Will involve utilizing one or more, or all of the following properties:

Low solubility, biological degradation or encapsulation of soluble fertilisers.

Not all are suited to container production.

Low solubility fertilisers

Are perhaps the least favoured due to the large volumes of irrigation and rainfall associated with outdoor crops. Much of this type of fertiliser will wash through and out of the container before the plant can use it.

Biologically degradated fertilisers

Are less than perfect in this context of use. Essentially the only chemical nutrient element which can claim to provide a slow release through biodegradation is Nitrogen.

Soil microbes and bacteria convert either organic or inorganic Nitrogen to either, or both, Ammonium or Nitrate Nitrogen which plants can then utilize. The limitation is that first there must be substantial microbe populations present and maintained in the potting mix to perform this function.

This requires a delicate balance of moisture, salinity, pH, and temperature. Such fertiliser has limited appeal in our container culture.

Encapsulated soluble fertilisers

The encapsulation material may be an organic or synthetic polymer. Prills of soluble fertiliser are coated with a layer/s of the polymer. Water can be drawn into the coated fertiliser prill due to the permeable nature of the coating.

Release occurs through microscopic cracks or pores in the coating which itself expands or contracts in response to temperature. Higher temperatures and expansion create larger openings from which the fertiliser inside is pushed out. This effect is described as an Osmotic pump. Lower temperatures cause contraction and limit release. A thicker coating or multiple layers extend the term over which release occurs.

Encapsulated fertiliser is your best option . But which one and why?

The selection criteria.

Consider in turn the following 7 criteria:

1. Nutrient analysis
2. Release pattern
3. Longevity
4. Rate of use
5. Safety
6. Availability
7 Cost

Nutrient analysis

The ratio of the N, P& K are relative to :

A. The potting mix composition

B. The plant species being grown

Nitrogen is the key driver as far as plant size is concerned. Put simply, low N will result in smaller slower growing plants. Excessively high N may produce soft, weak and stretched growth. In New Zealand fertiliser analysis is expressed in the elemental form; e.g. 21+2.1+9.9. Overseas the same analysis is reported in the oxide form; e.g. 21+5+12.

The ratios of N:P:K for woody stock production may range from 4:0.5:2 - 5:1:3 If you use a Bark based potting mix, pot all year round and grow mostly vigorous species, the best choice would be close to a 4:1:3 ratio. Use a higher N ratio in bark than peat.

European products are tuned to peat mixes, deciduous species and a short production season from Spring potting .

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New Zealand conditions and practice require a different approach.
Trace element content is also important.
New Zealand potting mixes and the mainly evergreen species we cultivate call for more Iron, particularly, than that contained in the European source fertilisers. Phenols in bark disrupt Iron availability . To overcome this we should have extra Iron in our fertiliser compared to those used in peat. Plant species sensitive to Phosphorous need a special low P formula and extra Iron. Plants in this group include many South African and Australian natives and Citrus.

Release pattern.

Deciduous plants require plenty of fertiliser delivery immediately after breaking dormancy. Failure to supply this will compromise growth potential. These plants grow strongly through Spring and early Summer but should have all the Nitrogen supply exhausted by early Autumn to allow for Winter conditioning.
The best release pattern for these plants is therefore more early and less later.
Conversely evergreen species put on most growth in late Summer and early Autumn.
Too much fertiliser delivery in Spring is undesirable. Field grown wrenched and containerized stock responds best to a low initial fertiliser delivery whilst it recovers from wrenching with more later for optimum growth.

Longevity.

Select product longevity in consideration of the anticipated time required to produce a saleable plant plus a few months extra to give some "shelf life". It is rare to market a whole production batch in one month and retailers do appreciate plants that hold condition.

Rate of use.

Longevity influences the rate of use.

In general terms the industry uses 0.5kg/ cubic metre of mix for each month in the longevity selected; e.g. 9 month longevity is used at 4.5 kg/cubic metre.
Fine tuning can produce even better results and, of course, lower rates will cost less. Carefully weigh-up the cost of a high input rate versus topdressing later after using a lower base input. You might find the later course is better value!

Safety.

Simply follow the manufacturers' guide-lines on use. Encapsulated fertilisers have an excellent safety record. Beware of formulations with lots of soluble or starter feed. These are sometimes called 'Fast start'. The quick release of fertiliser can burn roots. You must not 'Dibble' apply this fertiliser format.

Availability.

Some manufacturers and suppliers boast very large ranges of fertilisers. In a market the size of New Zealand it is impractical, costly and unnecessary to offer much more than 15 variants. The inevitable consequence is 'stock outs' and/or passing on the extra cost of slow moving stock to you .

Cost.

Some brands carry a premium price but not necessarily any performance benefit. You may just be paying for multiple middle men taking their cut, funding flash company vehicles, expense accounts and frivolous advertising . Trial an alternative less expensive brand, you might be pleasantly surprised!
Check out not only the cost per bag but the cost of use per cu.m. of mix.

Are you paying too much?

If you are currently paying more than $ 30 / cubic metre for the fertiliser in your mix to produce a nine month crop you could be paying too much!

Free advice is available from McHort, just call us!

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