their native habitats without ever receiving any outside intervention of fertiliser, gleaning what they can from decaying organic matter which washes down trees during rainy periods. I grow many orchids on trees and they grow and flower with no interference from me. Albeit, the number of flowers and their quality could definitely be improved with some fertiliser applications.
Nitrogen is an essential ingredient of all fertilisers. It creates the vegetative growth from which the flowers will later emerge. In winter, when most plants are at least semi dormant, little nitrogen is needed. Applying high nitrogen at this time can be devastating as the plant will not absorb the excess.
Weak growth rotted rots and fungal disease are often the result of too much nitrogen in winter. It can also induce 'kiekies' to emerge particularly in the softcane dendrobiums. During the cooler months, the, plants' needs for all elements, contained in commercial fertilisers, is greatly reduced so applications should be few and far between. In spring, new growths appear and these need to be promoted to ensure optimum flowering. A high N (20%) fertiliser e.g Aquasol, Thrive, HSO22, Aquafeed and Campbells Blue fit the bill. By early January, growths should be well advanced and it is time to 'knock off' the high nitrogen, replacing our high N fertiliser with one with about 12% e.g. Aqua K, HSOI2, Campbells Yellow etc. These fertilisers generally contain a higher percentage of potassium (K) which is essential for optimum flowering. Don't be fooled by fertilisers which are promoted as inducing plants to flower. The best we can hope for is that they will improve the quality and quantity of flowers. The use of lower N fertilisers should be continued until early May when it should be either reduced significantly or discontinued. Be guided by the weather. If the nights are becoming prematurely cool then act accordingly.
I am of the school that believes that there are few bad fertilisers on the market so I have no favourites but tend to follow the school that a varied diet is what I like so why shouldn't the plants like a change.
What they might miss out with one fertiliser is probably obtained from another. I don't like lobster or fillet steak very day and I doubt that plants do! The only consistent problem encountered with commercial fertilisers is their lack of calcium. Calcium strengthens the cell walls of plants and is an essential ingredient in making potassium more effective so calcium supplementation may be required especially if you are using tank water. New growers, I believe, place far too much emphasis on fertiliser. How many times do we hear growers asking 'What fertiliser do you use?' It is not what we use but how we use it that is important. Regularity of application during the growing season is very important. Strength of the fertiliser we apply also needs to be considered. Doubling the recommended quantities does not double its effectiveness in fact it will do nothing but cause you problems. A little, often, is the course most growers follow and it is probably the most sensible approach. Whether to water plants before you fertilise or not is another contentious issue. Some say you should while others say don't. Both schools can provide sound scientific evidence to back their argument. Personally, I believe that, in practice, the end results are about the same so it's not really a big issue.

Conclusion

All of the above is not to be regarded along with the Ten Commandments as absolute and inviolate.
If your plants are growing and flowering well with your current practices by all means continue. Too often we listen to what others tell us and immediately go home and endeavour to replicate what we have just been told with poor outcomes. Remember: 'If it ain't broke - don't' try and fix it'.

(*The corollary being also true: 'If it is, by all means tinker' Ed.)*

(Lecture presented by Nick Woolley to Logan and Districts Orchid Society meeting 15th April 2014.
Reprint of handout notes of lecture. Nick is a member of LADOS, Queensland Orchid Society Treasurer, Newsletter Editor for Ipswich Orchid Society & a recognised AOC Orchid Judge
Thank you Nick.

Ed.)

very reluctant to take up water once they have dried out completely and soaking entire plants may be necessary. Fine mediums such as peat and perlite dry out slower than open bark mixes. With all of these combinations and permutations it can be seen that new growers can often be troubled by watering practices. Some tips - go by the weight of the pot, push the tag right down into the media and ascertain the dampness below, separating plants that are in different media, and segregating plants in different size pots will all help. If you have doubt then don't water, leave it another day. When your do water it must be thorough. The media must be wet throughout. Sparse watering encourages shallow root growth. As a rough guide you will probably need to water about every 7 - 10 days in the cooler months and 2 -3 times a week in the warmer ones. As night temperatures increase, so should the frequency of your watering. This is only a guide as obviously small plans require more frequent attention as do plants grown in very open or large bark mixes such as Vandas. Watering can be achieved using a hose or overhead sprinkler systems. Both methods are fine but overheads require less effort. If you do use overhead irrigation ensure that all areas of the orchid house are receiving adequate water. Check the corners and the extremities of the sprinkler heads.
Crowded houses will require the sprinklers to be on longer since some plants will be acting as an umbrella for others. When to water is also a dilemma for newer growers. In winter try to avoid cold overcast days as the plants foliage needs to dry out before nightfall. Water early in the day in winter to minimise this problem. In the warmer months, timing is not as important but plants do require moisture to allow the sunshine to do its necessary work. Water and watering practices are the cornerstone of good growing once you master these you are well on the way to being a competent grower.

Light

For water to be fully effective in satisfying a plants nutritional requirements the carbohydrates must be converted to sugars. This is achieved through photosynthesis. Light is essential for this action to occur. How many growers say that their plants are growing well but they are not flowering? Sadly, new growers often receive the advice that they need a 'blossom booster' fertiliser. There is no fertiliser made that will make plants flower. In 99% of all cases of poor flowering, the culprit is a lack of light.
I don't know about the other l%!
When assessing light, you need to make observations at various times of the day in each of the four seasons and observe where plants are not receiving sufficient light or are only getting it for very limited periods. Overcrowded bush houses, with plants shading each other, is often a major culprit. Leaves that are abnormally green and soft are another reliable indicator of too much shade. In our area, 60% shade is about right for most genera. In most bush houses particularly those located among trees or adjacent to other structures you will find a considerable variation in light availability. With trial and some error you can match your availability of light to the plants needs. Paphiopedilums for example, need slightly more shade than Cattleyas, while semi terete Vandas require considerably more. To do this successfully you need to understand the plants natural habitat.

Air Movement

Stale air is the Mecca for fugal spores and many pests. Good air movement is essential for growing healthy orchids. Firstly, ensure that your orchid house is sufficiently open to enable any breezes that are present to pass through. This is important in winter when many growers close off their houses to minimise the effects of cold weather but fail to open them up adequately during the day.
On a day with a light breeze blowing (5 — l0 knots) get a few strips of light ribbon or plastic bag and hang them at various locations in the bush house and observe the air movement. Rectify any deficiencies. You may need to introduce some additional vents or even a fan into the orchid house.

Humidity

Humidity and air movement are intrinsically linked. There is no point in having the correct humidity (around 50%) if there is a deficiency in air movement since you will have stale humid air, another great combination for fungal and pest problems. Humidity in Ipswich can get quite low so damping down of the bush house floors in summer may be required. With high humidity air movement may need to be increased. Under the bench misters can be installed quite cheaply and are very effective. High humidity during cold winter nights needs to be avoided so water early on the good sunny days. It is high humidity rather than the cold which so badly affects our Phalaenopsis during winter.

Fertilisers

The final element in our pennant is fertiliser. The four previous elements: water, light, air movement and humidity are the primary ingredients of the 'cake' while fertiliser is the 'icing'. Plants grow quite happily in

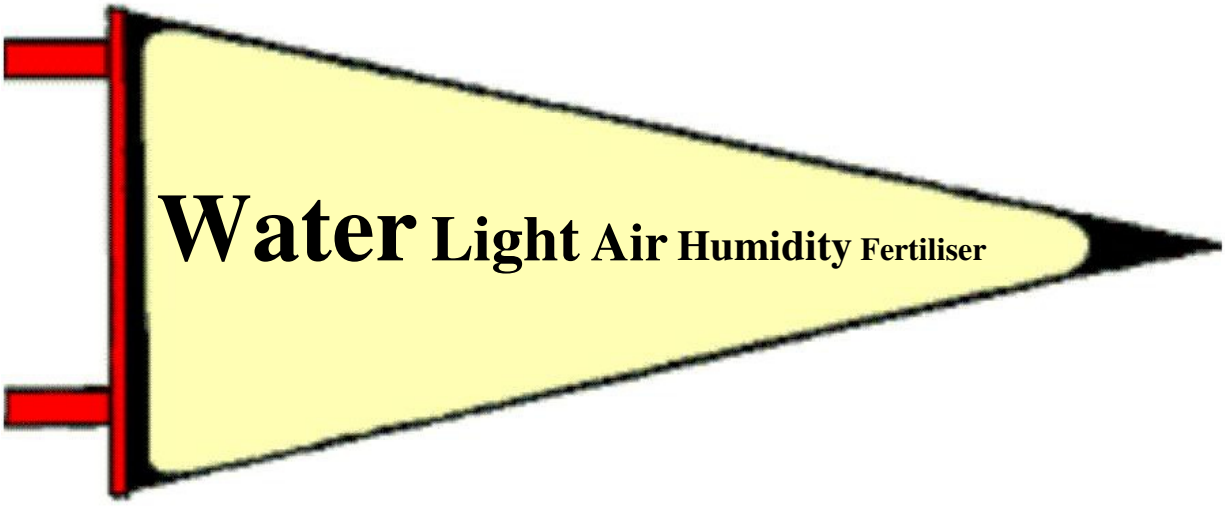
The Orchid Growing Pennant

By Nick Woolley

(A Taxonomy of Needs for Orchids *Ed*.)

Introduction

In today's session, I am going to introduce you to what I call the Orchid Growing Pennant which graphically demonstrates the relative importance of the five major elements required for successfully growing orchids.
"Taxonomy of Needs" for the growing of orchids. Ed.)



Water

The importance cannot be overstressed for it is water plus carbon dioxide, not fertiliser, which provides the carbohydrates which are the bulk (75 %) of the plants food requirements. When growers talk of feeding their orchids when applying fertilisers, they are often oblivious to the role of water.

Water Quality — In general, orchids are supposed to do their best when the water is slightly on the acidic side having a pH of around 6.5 but they seem to grow quite successfully using water with a higher alkaline pH up to 8.0.

pH is important in that nutrients are only taken up by the plant at optimum levels (when the pH is in the range of 5 -8). Rarely do we encounter water that is too acidic especially from town supplies so if any adjustment is necessary it is normally to increase acidity and this is done by adding citric acid. To check pH you will need a pH meter available at all good gardening outlet or swimming pool shop.

Town water around Brisbane hovers around the mid 7s while tank water is more neutral (6.5 — 6.8)

Water taken from dams can be problematic as it often contains high levels of salts especially during periods of low rainfall. Additionally, stagnant dam water can be a breeding ground for fungal disease.

Similarly if tank water is not used and replenished regularly, it can also cause fungal problems.

While the pH of tank water is fairly neutral it is lacking in calcium an essential element which assists the plant in taking up its other needs especially potassium which is crucial to the flowering process.

If using water it is advisable to water about every fourth watering with town water which contains some calcium. An alternative is to provide the plants with an occasional calcium nitrate supplement.

Unfortunately, few fertilisers contain adequate calcium since there is an incompatibility problem with the other dry ingredients of most fertilisers.

Watering Practices

Because of the importance of water its proper application must also be important. Too much equates to problems as does too little but it is preferable to underwater rather than over-water. Unfortunately, the symptoms of over-watering are identical to those of under-watering. To much rots the roots with the plant then being unable to take up any nutrients while, in the case of under-watering, there is little for the plants to absorb. As a rule of thumb, most orchids prefer to dry out between waterings. Some, such as the miniature Oncidiums need to do this quickly while others such as Cattleyas art quite happy not to dry out completely.

Potting medium is an important consideration e.g. sphagnum moss and to a lesser degree, coconut fibre are