

FERTILIZERS



Where weak solutions of liquid nutrients are mentioned they may be understood as comprising either organic derivatives as from animal or bird manures or seaweed derivatives; or they may be liquefied, phosphorus, etc, which may be bought at most nurseries and garden supply shops. The chemical composition is usually given on the outside of the pack and generally speaking there is little or no difference between most of them.

After a time experience and individual preferences may be worked out, but there is no necessity to keep to the one brand. A weak solution would be in the order of about one heaped teaspoon to about 20 litres of water. If liquid fertilizers such as maxicrop or fish emulsion are used the water should be slightly discoloured and no more. Both these liquid fertilizers may be added to organic or inorganic nutrient liquids.

Broken down further by another 10 litres of water, these liquid nutrients may be used constantly provided the plant is active in the growth stage, with no ill affects to either the plants or the potting material. Dormant plants or those in flower do not derive any benefit from applications of liquid or solid fertilizers, as in neither stage can any good effect be obtained by added fertilizers.

While some nurserymen recommend changing from one fertilizer to another to suit the plants in growing or maturing and flowering stages, such advice is best disregarded until sufficient growing experience lends confidence and judgment. All nutrient systems should be chosen to suit the climate and the style of growing of each individual and what suits one may not necessarily suit another.

Nutrient solutions derived from organic materials such as bird or animal manures should also be in weak forms and should not be used to take the place of correct growing procedures or flowering of plants. Forcing maximum efforts from plants by use of fertilizers instead of good culture leaves a price to pay and it is usually the loss or severe retarding of plants.

Solid fertilizers are usually organic and are better suited to semi-terrestrial orchids such as Cymbidiums and Paphiopedilums. However, applications of blood and bone or hoof and horn fertilizers to epiphytes when they are in full growth may assist the plants, but should only be given if the liquid fertilizers are discontinued. Some growers may work out systems based on slow-release fertilizers such as Magamp, Osmocote and other formulations, but a certain amount of care is needed if they are applied to orchids, which go through periods of dormancy in their annual cycle. This is particularly applicable to epiphytes and an overloading of the potting material with a continuance of fertilizer release will quickly kill the dormant root system as well as souring the potting material as watering is tapered off.

Well-meaning scientific people who expect ordinary growers to follow some type of laboratory technique in their plant growing attach a great amount importance to various minerals and elements. The basic information that we seek is how to make the plants grow, how to make them flower and how to keep them growing and flowering. This is all bound up with simple formulations and the fertilizers needed to carry out all these functions are all available so easily. Blood and bone fertilizer is rich in phosphorus, iron and many necessary elements, but most growers are apt to use it without noting in writing what they are doing or even marking the pots so treated. One of the easiest ways of doing this is to buy a packet of plastic tooth picks in three or more colours and stick them in the pots as they are top dressed, red for one month yellow or green for the next application and so on, putting down in a note book, without fail, what has been done.

If nutrient fertilizers are used, they, too, should be noted. Most of them are rich in nitrogen and will balance blood and bone. Any other important element like magnesium may be added by buying a packet of Epsom salts and adding as much as will cover a one cent piece to a 10 litre bucket of half or quarter strength Aquasol or Fish Emulsion or what ever fertilizer is being used.

For the plants in the cymbidium type mix, the best fertilizer is a large teaspoon of hoof and horn applied and worked into the top of the potting material in October and again in early March.

The primary lesson to be learned in potting methods as well as fertilizing is that if a plant is forced to do more than it normally is able to cope with in ordinary seasons and ordinary methods there is a price to pay in possible disease and eventual plant loss.

A safe rule regarding when to water is to water frequently in the summer and not so often in the winter. Water is the medium used to transfer the nutrients from the compost or fertilizers to the plant via the roots. If there is no moisture present then there is no transfer of food elements to the plant. During the growing period the root system is active, new leaves and bulbs are forming, and the plant requires maximum food input. Since this comes from the root system through a solution of water and food elements, then it becomes necessary to provide plenty of water. The plant must not be allowed to dry out for any length of time at this stage and continuous supply of plant food must be available.

A balance has to be maintained between the plant's requirements, the rate of transfer of food from the compost or fertilizer into solution of water, and the amount of water available to act as solution. If too little fertilizer is transferred to the plant the only bad feature is that the plant may not grow as quickly or robustly. If there is too much water and the drainage is good then we are wasting fertilizer. Should the drainage be poor the plant becomes waterlogged, air is kept from the roots, the growth of harmful bacteria and fungi is fostered, and we could loose a plant. When there is too great a rate of fertilizer release and insufficient water present, then there is a build up of concentrations of ingredients in the solution. While weak solutions are beneficial, increased concentrations will burn root tips and cause the roots to die. The plant cannot pick up nutrient, it loses vigor, the bulbs shrivel and the plant can die.

SUPERPHOSPHATE

This consists of 22% phosphoric acid. Its importance is in the promotion of root and stem formation. Phosphorus is often in short supply and a deficiency results in poor root development and any root starvation will be reflected in stunted leaf and stem growth.

BONE MEAL

This is a slow acting root producer, principally strong in calcium, which is a most important element and is a plant structure-building material. When calcium is in short supply seeds often fail to form and other noticeable symptoms may be found in the young leaves at the end of shoots, which do not form properly. Supplies of calcium may be obtained from the pine-bark, which has been estimated to contain 1.32%

SULPHATE of AMMONIA

This is a warming, slow acting source of nitrogen, containing 20 to 21% of that element. Nitrogen affects the growth of the plant and the effects of its excess or deficiency are very noticeable. If the supply of nitrogen is inadequate, stunted growth, premature defoliation and discolouration of leaves (becoming either yellow or reddish green) will result. Flowers may also be late in opening. Sufficient nitrogen will produce healthy stems and leaves, which is even more important to orchids than to most plants. Too great a supply of nitrogen will lead to excessive vegetative growth, at the expense of flowers, delaying maturity and reducing resistance to disease. Sulphate of ammonia also has an acid reaction, which is beneficial to orchids.

POTASH

Potash affects the efficiency of the leaves in making fibre and plant tissue. The orchid bulbs consist of fibre and water covered by skin, and there is four to six times as much fibre in the flower stem as there is in the pseudobulbs. It is not difficult to realize how essential potash is to orchids as it not only stops the leaves from kinking when waving in the wind, and benefits the general formation of the plant, but its application is definitely a sure way of obtaining an abundance of flower spikes. An important effect of potash is to counterbalance excess of nitrogen and as these act in conjunction, it is important to include them both in the compost. When potash and nitrogen are both deficient the plant is stunted and the leaves begin to die at the tip and along the edges. If potash alone is deficient, the leaves are large but do not function properly, shoots die back and marginal breakdown similar to that which is caused by lack of water during hot weather can be noticed in the foliage. Potash deficiency is also bound up with plant diseases.

MAGNESIUM

Lack of magnesium is partly the cause of numerous back-bulbs and also of flower buds falling before they have opened in plants other than orchids - gardenias particularly - it may be easily noticed by the appearance on the foliage of a network of green veins, the spaces between them being quite yellow. Usually magnesium is applied to gardens in the form of dolomite or slaked lime. This, however, is very alkaline and would be detrimental to orchids. The most satisfactory form of magnesium for our purpose is magnesium sulphate, better known as Epsom Salts.

SULPHATE of IRON

This has a marked effect on the general health of the plant, as well as colouring of the blooms and the leaves. Its presence is essential for the formation of the chlorophyll cells, which absorb sunshine and use it to break down the carbon dioxide and extract from it the carbon for use by the plant. It has been proven that a deficiency of iron causes the sheath by the leaf stem and the butt of the leaf to blacken and that complaint eats into the eye of the bulb. When the plants are supplied with iron, they return to healthy green condition. No harm is done to the orchid plants by having an excess of iron. The organic materials supply minor elements and the fertilizers used.

These then are the components of the compost and it is easy to see how necessary is the part played by each one in assisting the production of healthy plants and blooms. If the supply of any of these substances is inadequate, the plant will show symptoms of its starvation, which are easy to recognize. For instance, kinked leaves reveal a deficiency of potash and the stunted leaf growth, lack of nitrogen.

An alternative very satisfactory growing medium for semi-terrestrial orchids may be made as follows:

12 bins of 10mm (1/3in.) old pine bark
3 bins of old hardwood sawdust and 2 bins of peat moss
2.75 kg. (6 lb.) Lime to provide calcium
1.8 kg. (4 lb.) Superphosphate to provide phosphate
450 g. (1 lb.) sulphate of iron to provide iron
675 g. (1 1/2 lb.) potassium nitrate to provide potassium
1.4 kg. (3 lb.) urea-formaldehyde to provide nitrogen
1.2 kg. (2 1/2 lb.) magnesite to provide magnesium

NUTRIENTS

Orchids are no different from other plants in that their roots extract nutrients from their surroundings. For terrestrial species this includes the soil, humus and decaying litter. For epiphytes the roots wander over rocks, the surface of bark and in crevices where food collects.

The elements required by orchids in order that growth, flowering and reproduction can occur are no different from those required by other plants. Some elements are required in large quantities and are known as major elements, while the minor or trace elements are needed in very small quantities. Both types are listed below.

Major Elements

Nitrogen

Phosphorus

Potassium

Magnesium

Calcium

Sulphur

Minor Elements

Iron

Manganese

Boron

Zinc

Copper

Best growth is achieved if a balance of nutrients is available rather than if one or more are in excess. If a single element is deficient then normal growth is disrupted or distorted. Adding the missing element is the only way to restore normal growth. Increasing the levels of the other elements will bring no response until the missing element is restored.

HELPFUL HINTS FOR HEALTHY ORCHIDS

USING (TREATED BARK)

Deflasking mix for taking plants out of flasks

Grade (1) 2 to 3 inch pots

Grade (2) 4 to 5 inch pots

Grade (3) 5 inch plus

Grade (4) for most Bifoliate orchids

Vanda Bark Large chunky pieces

FERTILIZERS

Half to quarter strength of Charlie Carp, Aquasol, Aqua K., Aqua Feed

Mixed with

Iron Chelate (small amount on tip of a teaspoon)

Magnesium Sulphate (Epson Salts) half teaspoon)

White Vinegar (one & half teaspoon)

Brown Sugar (1 teaspoon)

Condy's crystal (enough to colour the water)

Measurements to 10 litres of water

These notes have been used at our Cultural and New Grower's Meetings. They are from various sources and we thank the authors. All articles are supplied in good faith and the Bribie Island Orchid Society and its members will not be held responsible for any loss or damage.