

CARE of CYMBIDIUMS

'COMPOST' or 'SOIL'?



Cym Pastel Queen

An examination of the medium in which orchids are grown will show that the basic materials used contain very little plant food. For this reason it cannot be strictly called "compost". The alternative "soil" is the medium in which most garden plants are grown. This is rather inaccurate as orchid soil contains no clay or loam, but the use of this word is preferable to the use of 'compost' as the reference to compost gives the impression that one is starting off with substances rich in plant food. This is not so. The plant food must be added until the material has been built up to the plant food value. Henceforth, when the word 'soil' is mentioned, it will be used in reference to the medium in which semi-terrestrial orchids are grown.

A SUITABLE SOIL FOR TERRESTRIAL ORCHIDS

The soil for terrestrial orchids, such as Cymbidium, Zygopetalum and Phaius can be made up from any material which will not collapse quickly. It should have a slightly acid nature, must not sour under potting conditions and should be cheap and easy to obtain. Satisfactory materials are old pine bark, shavings or simply sawdust from hardwood. These materials do not provide food, simply a comfortable growing medium for the orchid plant.

ARE MANURES NECESSARY?

The percentage of plant food in any of the above materials is very small indeed. Imagine setting aside a section of a garden, filling it with this soil and planting roses or tomatoes in it. One would certainly not obtain a very good result. The reason is simple, there is not, by any means enough plant food present to enable the plant to survive.

Obviously then, nourishment must be added. It is not necessary to supply large quantities of fertilizers, but organic and mineral nutrients must be present to produce healthy plants. Much controversy has risen over the use of manures for orchids. Yet everyone will agree that common plants growing in gardens benefit from the use of fertilizers.

No form of life can flourish without adequate nourishment. The word 'flourish' is used advisedly, for life can be maintained by the means of food low in nutritional value, but the detrimental effects of constant reliance upon such food has been demonstrated time and again. There is general agreement that knowledge of the food requirements of most plants, and the supplying of these foods where they are absent from the soil, will improve their roots, leaves, and flowers. Logically, the same reasoning would apply to the realisation that orchids, too, will benefit by being given all the plant foods they require in a carefully balanced proportion.

In their natural state, orchids do receive organic nourishment. The natural habitat of orchids is on the underside of forest trees. Passing down the trunk, this water gathers in it droppings of bird and animals which live among the branches, the decaying bodies of insects and beetles, and the rotting bark and mosses.



Cym Burma Star

PLANT NUTRITION PREVENTS DISEASE

Many problems may be brought about by malnutrition. It has been proved that many orchids with the appearance of disease can be cured by being given properly balanced plant foods together with satisfactory growing conditions. If orchids were treated as ordinary green-leaf plants and supplied with nourishment as other plants, many of the problems which are worrying growers could be practically eliminated. Orchids obtain some nourishment from the air if the leaves are healthy and functioning correctly, but before the plant can function at all, nourishment must be supplied to the roots.

MANURES ARE NECESSARY FOR BACTERIAL ACTION

A point often overlooked is that the potting medium does not consist simply of the growing medium, plus plant food.

The soil is made up of huge colonies of bacteria. In order to enable both the plants and the bacteria to thrive manure must be supplied. If adequate supplies for both are not present, the bacteria will monopolise what food supplies are available, and it has been proven that plant starvation is caused by such material as sawdust or coarse leaf-mould which will not support bacteria. So the soil as well as the plants must be supplied with food.

Organic manures are preferable to chemical manures. One of the reasons for this is that chemicals are attracted to porous pots or growing media so that big concentrations build up. The roots tend to avoid these areas and may often be seen growing out from the top of the pot. Organic manures also assist the growth of useful bacteria.

PREPARATION OF THE SOIL



Cym Gurrat

For the above reasons, organic and mineral fertilizers are essential, and the best method for adding them to the soil and the correct proportions in which they should be supplied must be ascertained. It is best to use neutral base materials in order to be certain that the final proportions are correct. If some element is already present that element will be in excess when the usual proportions are prepared and it will destroy the desired balance.

In preparing soil, it is best to make up batches of 1m cubed. The pine bark is spread to a depth of 25-30cm. It is then dampened lightly in order to allow the manures to work. These are spread on the surface of the pine-bark to within 15cm of the edges and forked lightly. Cover this with leaf mould and then with sand. Allow it to stand for at least five days for the manures to work. They will generate a great deal of heat. After five days, turn the mixture thoroughly. Repeat five days later. This will remove the heat from fertilizers and render them safe to use on plants. This soil will be found to be porous, granulated, moisture-retaining growing medium. To keep it for a time, it is advisable to shelter it from the weather. Rain would wash away some of the plant foods and spoil the proportions, depriving the orchids of the benefits provided at such pains. Some growers say that the fertilizers are washed away after the first few watering. Although it may be true a little of the quickly soluble manures will find their way through the drainage hole, most will be retained and, in any case, the aim is to feed the soil as well as the plants.

COMPOSITION OF THE SOIL

An excellent growing medium for a large section of semi-terrestrial orchids can be made by using the following ingredients:

200 parts (by volume) seasoned, long lasting wood shaving
100 parts (by volume) old pine bark 50 parts (by volume) sharp sand
12 parts (by volume) Dynamic Lifter (steaming kills viruses)
1 part (by volume) blood and bone
1 part (by volume) complete garden fertilizer strong phosphoric acid

Thoroughly mix all ingredients, then dampen, leave five days, turn them over then leave a further five days before using. For storing keep the mixture moist but covered from continuous rains. Turn occasionally to keep fresh. This soil has sufficient correctly balanced plant food immediately available to grow strong healthy orchid plants through all stages on to flowering. In addition, it is moisture retaining and will take much water without risk of sogginess or sourness, it will also last in good condition for about two years.

SAND

The most suitable type is fresh bush sand, this will contain some of the minor plant elements and will not sour as does sand taken from the bed of a river.

POULTRY MANURE

Organic matter is vitally important for the production of healthy plants as it provides carbon dioxide, increase the water holding capacity of the soil, allows root penetration and modifies extremes of soil temperature in the soil. Fowl manure has been analysed and found to be the richest of the animal manures in plant food material. It contains more than twice as much nitrogen and phosphate as horse and cow manure and about the same amount of potash. The greater part of nitrogen it contains so available to the plants.



Cym Flaming Pepper

BLOOD and BONE

This is an organic fertilizer strong in nitrogen (5 to 8%) as well as supplying trace elements. It is too expensive to buy the pure forms of the minerals needed, so those commercial fertilizers which are known to be strong in the elements required are used. The first of these chemical fertilizers is;

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 poor 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.

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 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.

POTASH



Cym Lamorack

Potash affects the efficiency of the leaves in making fibre and plant tissue. The orchid bulb consists 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 pseudobulb. It is not difficult to realise 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 elements act in conjunction, it is important to include them both in the soil. 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 a 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. 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 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 blooms and leaves. Its presence is essential for the formation of 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 the complaint eats into the eye of the bulb. When the plants are supplied with iron, they return to a healthy green condition. No harm is done to the orchid plants by having an excess of iron.

These then are the components of the soil 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 one of these substances is inadequate, the plant will show symptoms of its starvation which are easy to recognise. For instance, kinked leaves will reveal a deficiency of potash and 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 old pine bark

3 bins of hardwood sawdust and 2 bins of peat moss** 2.75 kg lime to provide calcium

1.8 kg superphosphate to provide phosphate 450g sulphate of iron to provide iron

675 g potassium nitrate to provide potassium 1.4kg urea-formaldehyde to provide nitrogen
1.2kg magnesite to provide magnesium

* bins used are 54 litre (12 gal) garbage bins

** peat moss helps to keep the pH at an even balance. A medium pH of 6.2 to 7 is ideal, but a slight variation one way or the other will do no harm.

As the ingredients are mixed, dampen down with a gentle spray of water. This potting mix can be used immediately. If left to stand it should be covered with black plastic.

VARIATIONS CAUSED by LOCAL CONDITIONS

Always make allowance for local conditions. If there is a deficiency of any element in the soil where basic materials, such as leaf mould, are obtained, such a deficiency will need to be remedied by the addition of the missing element to the soil. On the other hand, some types of soil may be very strong in a particular element in which case there will be no need to include it; growers obtaining materials from ironstone country may omit the sulphate of iron, those in limestone country magnesium, and those in clover district need less nitrogen.

The conditions under which the plants are grown are also important in this regard. A case in point is the low light shade house, where plants will need more potash and less nitrogen. Also young plants will need more nitrogen than flowering plants. A somewhat lighter shade cloth is advisable in the case of those using plastic or terracotta pots as these are less porous than cement pots.



Cym madidum

It may be of interest to spend a few moments in explanation of the methods used to determine the value and effect of individual elements.

The essential elements have been determined by burning plants and analysing the ashes. It has been discovered that carbon, hydrogen, oxygen and nitrogen are absorbed by plants through their leaves, while nitrogen, phosphorus, potassium, calcium, sulphur, magnesium, iron, manganese, copper, zinc, and boron are obtained through the root system. These have been classified as major and minor elements according to the amounts required by plants. Although iron is for most horticultural purposes classed as a minor element, in orchid culture it is among the major elements, as large amounts are not harmful to orchid plants.

In order to determine relative value of each of the elements, plants were placed in washed sand and watered with a chemical solution containing all but one of the necessary elements. The growth of these plants was compared with that of plants receiving all the elements and the differences noted, and in this way it has been made possible to determine by outward symptoms, the nutritional needs of orchid plants.

Cymbidiums should be fed with liquid fertilizers three times a month. During the hot months, from October to the end of January, high nitrogen fertilizers should be used. This extra nitrogen is needed because sunlight removes nitrogen and bark uses nitrogen to assist in its decomposition. From January until the end of June use a fertilizer higher in potash which assists the setting of spikes and the colouring of flowers. Feeding should be discontinued every fourth week. Instead the plants should be drenched with water so thoroughly that there is a good run off of water through the drainage holes.

The purpose of this drenching is to remove any build up of salts from the fertilizers which may cause black tips on the leaves. Take care not to use too strong a solution of fertilizers as this may damage the roots.

BREAKING UP PLANTS

Here are the steps to be taken when breaking up plants. If the following method is adopted the job may be accomplished quite simply and without risk of damage to the plant. The method given is for cymbidiums growing in the temperate area.

Step 1

The first consideration before any attempt is made to divide the plant is to take all the necessary steps to make it as healthy as possible, especially if it has been growing inside for any length of time. This may often be the case, as the logical time to break up the plants is soon after the flowering period in order that the divided plant may, in future, produce as many blooms as possible. Place the plant in the orchid house for two or three weeks in a position where it is ensured of ample air and light.

Step 2

Reduce the supply of water and during the last two or three days do not water the plant at all. This is important for several reasons. Firstly, the medium in which the orchid is growing will shrink within the dryness, making it's removal from a cement or clay pot a much simpler job. Secondly it will fall away from the roots more easily. Thirdly, the roots will be tough therefore less likely to break. Orchid roots will not mend after breaking, they die back to the last break.



Cym suave

Step 3

Knock the plant out of the pot. If it is growing in a cement pot the roots will cling to the sides. It is quite simple to release the roots by running a long slender knife carefully around the inner edges of the pot.

Step 4

Lay the plant out on the potting bench. If the roots are tightly tangled take a slender sharp knife and cut through the roots about 13cm (5 in) from the base of the bulbs, severing the lower half of the roots from the plant. Cut the roots only if the plant is pot bound. Other wise just separate them.

Step 5

The best place to make the division will be apparent from the appearance and "feel" of the plant. With a gentle twisting motion backwards and forwards separate the bulbs. In some cases, it may be necessary to use the point of a sharp knife to assist the breaking apart. Should there be any back bulbs, cut any roots from them and remove them first. Then, holding the plant in an upright position, shake it gently and pull the bulbs outwards. They will come away very easily. Separate the plant into small groups of not less than three or four green bulbs. If any of these roots should be damaged, remove them at the break with secateurs, or a blunt pointed pair of scissors. Should the break be at the neck, remove the root. With a little practice it is easy to disentangle the stubborn root growth with very little injury.

Step 6

In breaking plants you will see growths at these different stages:

1. The lead which is a well-established growth with a good root system but which has not bulbed out.
2. The leading bulb, the last bulb made, which has an active lead coming away from it.
3. The swinger or waning bulb, which has some live roots and some green leaves.
4. The back -bulbs, which are devoid of both roots and leaves. Deal with these individually.

If the roots of a leading bulb seem too bunched, it may be necessary to remove some of them. The ones to be taken are those near where the break of the rhizome was made. Remove those which have the most lateral roots as they will be the oldest. There should be six to eight healthy

roots left. The roots of the waning bulb are in poorer condition and it may be necessary to make some drastic cuts. Poor quality roots, if allowed to remain, will simply die and sour the soil. Reduce the roots, say, to three. It will then be necessary to reduce the leaves accordingly.

Step 7

Place the bulbs in a shady, cool, airy position, with the butts all facing in the same direction. Dust them lightly with Bordeaux mixture, which acts as a preventative to bacteria and fungi and also as a drying action. It is an advantage to leave the plants in their present position for half an hour so that the roots may dry.

Step 8

Meanwhile prepare the pots. If using the pot from which the orchid was taken, scrub it thoroughly. Naturally, additional pots are required for extra plants. The ordinary kind of terracotta pot usually has far too small drainage hole. The type of pot makes little difference to the plant. Probably the least suitable is a glazed pot. Plastic pots which are more commonly used now will need no preparation beyond making two or three more drainage holes depending on the size of the pot.

Step 9

Now for the soil. Have it in good, moist growing condition. If using terracotta pots tease a little of the smaller parts of medium into crocked area.

Step 10

Planting. Place the plant in the pot slightly- off-centre with the active growth facing the farther side. Hold it with the crown of the roots within 18mm of the top of the pot. Now add the soil, shaking the pot gently at intervals. Firm the soil by shaking do not ram. After several waterings the soil should be about 18mm from the top of the pot. If it is good soil, it will remain at this level for some considerable time.



Cymbidium Golden Elf 'Sundust'

Step 11

Should there be the slightest suspicion that the plant is loose, it will be necessary to stake it securely. Push the stake to the bottom of the pot on the side where the root appears to be the weakest. Wind plastic tie around the stake, then around the plant tying it at the stake. Never wind the tie around the bulb. Label the plant, pushing the label well into the pot.

Step 12

Place the plants in a cool shaded position in the orchid house. The shade will lessen evaporation from the leaves and prevent shrivelling of the bulbs.

Step 13

Lightly spray the leaves frequently. The water which runs off into the pot will make it unnecessary to water again for perhaps a fortnight or even longer. Do not fertilize for one month. If the operation is performed in the spring or early summer, root action will take place in a fortnight. Once this has occurred the plants may be treated the same as others established in the orchid house.

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.