



Cultivation of Clivias

Aspect

Clivias prefer dappled shade, filtered, or indirect light when grown outside. They will also grow in heavy shade, but they will be 'leggy' and flowering will be sporadic at best. The only exception to flowering in heavy shade is *Clivia gardenii*.

All species will appreciate direct early morning sun, but *must* be sheltered from the hot sun. In containers, they do well on a shady veranda, and can also be grown indoors providing they receive good light, but not direct sun. They love to be planted under the dappled shade of trees, both evergreen and deciduous, or in shade houses with shade cloth providing approximately 70-80% light protection. Variegated clivias do best with a slightly lower light intensity to bring out their full potential.

In frost-prone areas, clivias should be under eaves, or planted in the garden where they will receive protection from tree or shrub canopies, or under the protection of a shade-house.

Growing Medium

Clivias will grow well as long as there is excellent drainage, excellent aeration, and good organic content - the crucial aspect is the drainage. The water should flow out of the bottom of the pots very rapidly when watered. Garden compost should not be added to pots, as this will aid in water retention, and may cause the plant to collapse with root-rot. When planting in the garden, do not plant in clay-type soils. Choose a soil that is loamy and free draining - they love to be planted where there is loose, free-draining soil and lots of leaf-litter. It may be necessary to build-up beds with a free-draining mix to facilitate their needs outside.

In heavier soils, try to plant them on a slight slope to aid drainage.

Clivias grown in pots prefer a coarse medium, such as a well composted pine bark, which is a black odourless medium. It is **not** advised to add a layer of 'crocks' for drainage when growing clivias in pots.

Watering

Once they are established, clivias are extremely resistant to drought, as long as there is sufficient organic matter and shade. The frequency of watering will depend on the age of the plants as well as the growing medium used. Seedlings will require more water than older mature plants, and terracotta pots will dry out more rapidly than plastic pots. Mature plants on average may require watering once a week between spring and autumn - when watering, the plants should receive a thorough drenching. During winter, the plants may remain drier, and require watering once or twice per month. If you put your fingers in the pot to a depth of 5 - 10 cm and the medium is bone-dry, the plants can be watered, otherwise leave it a bit longer. If possible water in the morning, and avoid watering directly into the crown to reduce the incidence of fungal and bacterial rot.

Fertiliser

Clivias are heavy feeders and will perform at their best if this is addressed, particularly when they are grown in an inert medium such as a composted pine bark potting mix. Fertilisers can be either chemical salts, organic fertilisers, liquid, or slow release. Liquid fertilisers offer a quick response, and should be applied regularly when the plant is actively growing. Slow release fertilisers are ideal for fertilising the soil over a long period. Whatever method you use it is best to apply 'little and often'. Liquid fish emulsion or seaweed fertilisers are very useful, while slow release fertilisers like Osmocote are effective. Clivias planted in garden beds benefit from a dressing of blood and bone, or a slow release fertiliser such as Dynamic Lifter (being careful to apply it away from the base of the plant).

Clivia Pests and Diseases

Even though they are quite robust plants, clivias are subject to a number of few pests and diseases. These should be treated promptly as the earlier they are attended to, the easier treatment should be. Good hygiene around the garden will help minimise attacks to plants, and includes removing weeds, old rubbish and any pieces of old rotting wood that may harbour pests. Regularly remove old and yellowing leaves from your clivia clumps as these can harbour pests. Watch carefully for slugs and snails, mealy bugs, and fungus gnats, and treat accordingly if discovered.

The best way to help prevent disease is to keep your plants as healthy as possible, especially if they are container-grown plants. A stressed plant is more likely to succumb to disease than a healthy one, so ensure that plants are well fed, are not over or under watered, have adequate ventilation, and are in the correct pot for their size. Remove any dying or rotting leaves from plants, and always isolate any plants that are suffering from disease.

Pests

Mealybugs

Mealybugs belong to the scale insect group, and have a worldwide distribution. They are named because of the whitish 'mealy' wax which helps to slow down water loss from their bodies. They generally prefer warm, humid, sheltered sites, and can build up huge numbers in a very short time severely damaging young leaves and transmitting plant viruses in the process.

Mealybugs feed by inserting straw-like mouthparts, known as stylets, into the plant tissue. Honeydew is the waste product of mealy bug feeding, and is a perfect medium for sooty mould fungi. Ants also love to feed on this honeydew, and they shelter the mealybugs in 'barns' they construct on protected flat surfaces (e.g. under leaves), and in the leaf axils of plants. When the ants stroke the mealybug's abdomen, it secretes a drop of honeydew.

Mealybugs thrive freely in temperatures of approximately 25C with a relative high humidity. In ideal conditions, there will be multiple generations within a year, so they can become resistant to pesticides in a relatively short time. For this reason it is a good idea to vary the types of chemicals or such that you use to control them.

Parasitic wasps and ladybirds are two methods of biological control, the wasp usually being the more effective.

Chemical methods include Confidor or Folimat for larger infestations, or a pyrethrum spray for mild attacks. Minor infestations may be removed by hand, or with a cotton tip dipped in methylated spirits.

It is very important to control or eradicate ants, as the ants will protect the mealy bug colonies, and even re-locate them if under threat. Ants will also attack parasites which attack the mealy bug. Care must be exercised with all chemical pesticides – they must be used according to manufacturer's instructions and used with caution.

Neem Oil has also been used with great effect against mealy bugs if a non-chemical option is preferred

Snails and Slugs

These can do enormous damage to clivias, attacking the leaves, soft new growth, buds and flowers. They can be easily removed by hand if there are only a few, otherwise more aggressive methods will be required.

Common non-toxic methods are beer traps, or placing a sharp material around the base of the plants, such as crushed egg-shells, or small sharp stones or gravel. More serious infestations will respond well to a new generation slug and snail killer called Multiguard. This product is not a scheduled poison, and is non-toxic to domestic pets, birds, wildlife, etc. Its active ingredient is based on iron. It lasts up to four weeks and will break down and add nutrients to the soil.

Fungus Gnats

These tiny, mosquito-like insects are usually first noticed darting about new seedlings.

The adult fungus gnats are an annoyance, but it is the larvae that can do great damage to your young plants and seedlings by feeding on the new roots. This feeding causes stress to the plants, and provides an entrance for disease pathogens. The larvae can also carry fungal spores. The first sign of their presence may be the wilting and decline of the plant.

To monitor these pests place some of the commercially available yellow sticky cards (these are often used to catch thrips and white fly), or a slice of potato in the pots where you are germinating seedlings. The cards will attract the adults, and the larvae are attracted to the potato – these can be used to help gauge the amount of larvae present. The larvae also feed on fresh compost, so avoid using this in your pots. Use a well-draining potting mix, as overly moist conditions will also encourage their presence.

It is also important to practise good hygiene in your plant area, and remove old plant material and garden debris.

Pyrethrum sprays are effective against the adults, and there are biological controls such as nematodes and predatory bacteria to control the larvae.

Diseases

This list of diseases is by no means exhaustive. Clivias are subject to several different diseases, often depending on the area and climatic conditions where they are grown, and need to be diagnosed and treated accordingly.

Damping-off Fungi

Several species of fungi cause damping off, and include Pythium, Rhizoctonia, Phytophthora, and Sclerotium. This disease is more common in clivia seedlings and can be a serious problem. Young plants and seedlings can rot at the base and collapse. These fungi can also attack adult plants, but the adults are generally not killed.

It is very important to maintain good hygiene, ventilation, and excellent drainage, especially in warm, humid conditions.

Control is by drenching the soil with fungicides such as Fongarid, and copper oxychloride sprays.

Bacterial Soft Rot

The symptoms of this usually begin with the yellowing of one or two bottom leaves, and may not be noticed until the plant literally falls over.

The base of the plant will contain a dark sodden lesion, and the whole basal area may rot and have a strong stench. It is important to immediately isolate the plant, as it is very infectious. The plant may be saved if the problem is detected early enough. Cut away all the rotting tissue until only healthy plant tissue remains. Clean your blade with a methylated spirits or some form of disinfectant after each cut to prevent infecting new leaves as you work. Apply a thick paste made with Mancozeb to the affected area, or soak in a Mancozeb solution and allow to dry for a day or so before replanting. In the case of severe root loss it you might need to replant your clivia in either a coarse river sand or sphagnum moss until the roots regrow - and do not over-water!

This disease is caused by bacteria, and usually occurs when the potting mix or soil is poorly drained and over-watered.

Chlorosis

Chlorosis is a yellowing of the leaves where the plant produces insufficient chlorophyll. It is usually caused either by a mineral deficiency, or the pH of the mix does not allow the uptake by the plant of certain minerals.

If the pH is too high i.e. above 7, iron will not be available to the plant. This can be helped by using iron chelates either as a foliar spray or applied to the soil. If the pH is too low i.e. below 5.5, magnesium will not be available. This can be remedied by using magnesium sulphate or Epsom Salts.

Germinating Clivia Seeds

There are several different ways to germinate clivia seeds, but perhaps the easiest way for the novice is to simply place them on the surface of a pot containing your seed-raising mix. The mix can either be in pots (not too large) or seed-raising trays. A number of seeds can be accommodated per pot with this method, but if you are growing several seeds of the same cross, it is better to have one cross per pot, or use dividers to separate the seeds of different crosses germinating in larger trays.

Seeds should be placed on top of the medium, and pressed down so that the top of the seed is still visible – it is not advised to bury the seed as this will increase the chance of rot. If you look closely at the seed you can usually observe a growing point which should be placed facing the medium.

As to the propagating medium, some people use perlite, others use sphagnum moss, however a seed raising mix is also very suitable. General purpose potting mixes can also be used as clivia seeds are relatively large.

The mix should be kept damp, but not too wet, and placed in a warm position with good ventilation. It is not advised to cover the seeds as this will also increase the chance of fungal rot.

When the seed has germinated, it will produce a thick white root, which will often push the seed out of the soil. It can be gently reinserted into the mix by first making a hole in the mix with a pencil or such, and gently pushing the root in, ensuring that the seed is kept on top of the mix. A leaf shoot should soon appear. Note that the seed will provide sufficient nourishment for the new plant for the first few months.

The seedlings need to be in a well-ventilated place, and not placed in direct sunlight. Once they are growing vigorously (and several centimetres tall) a dilute liquid fertiliser can be used to encourage strong development.

As long as they are growing vigorously, the seedlings can be kept in their community pots, but once they are large enough, they can be put into individual pots. Make sure that the pot is not too big for the plant – the size of the roots should match the size of the pot, while allowing room for growth. Use pots which are deep rather than shallow to encourage good drainage.