Scale and Mealy Bugs

Know the enemy
Scale and mealy bugs are closely related and share many similarities in life cycle, behavior, preferences and treatment. They frequently co-exist. Both have a predeliction for hiding in crevices where leaf meets stem, under leaves, around dead husks and within excess potting mix about the stems. They seem to shun the light are often only seen when a plant is moved. Damaged or poorly located plants are particularly susceptible.

Scale appears as tiny waxy brown or white buttons on the leaves. These are the females. The males appear as white, cottony masses. The immature forms (crawlers) are difficult to see with the naked eye but spread from plant to plant often on air currents. This is the most susceptible stage for treatment. The egg stage is protected under the shell of the female even after she dies.

Mealy bugs differ in appearance by having legs and a tail which gives them mobility. A clue to their presence is the scattered small white powdery threads they leave behind on the leaves. The immature forms (crawlers) are difficult to see with the naked eye and being mobile spread from plant to plant.

Once these pests are established they are difficult to eliminate. Their life cycle ensures the emergence of a new crop every 10 days or so (sooner in warm weather). Without timely treatment these pests spread rapidly, and can become so entrenched that they overwhelm the plant and destruction of the plant may be the only option.

There are many treatments and to avoid confusion they are best thought of in the following categories.

1. Prevention
2. Physical removal
3. Prophylactic oils/ sprays
4. Suppressants
5. Insecticides

In medicine there is a saying that if there is more than one treatment for any complaint, none of them are perfect and this is true here. It is almost inevitable that you will need to use a combination or perhaps all the above treatments to achieve success. For example without manual removal of the visible infestation eco-oil is unlikely to be effective.

Physical removal
First remove any dead material such as old sheaths and flower spikes. Then it is relatively easy to wipe off the visible disease from stems and the undersurface of leaves with a tissue soaked in 50% methylated spirits, or soapy water. I use (isopropyl) alcohol wipes. Dispose of these hygienically. Check the backs of flowers where the stem starts, as this is another favoured site. Rhizomes buried in potting mix are susceptible and should be exposed.

Check for mealy bugs between the pseudobulb and the lower leaves, particularly on Miltonias and Odontoglossums. The junctions between leaf and stem also need special attention because it is similarly difficult to get to. A satay stick with the tip dipped in methylated spirits is a very handy disposable tool for the exploration of tight crevices. Isopropyl (rubbing) alcohol is also suitable as a dip.

Scale is difficult to remove from the wrinkled stems of Cattleyas without a firm toothbrush, but be careful not to damage the plant. They can be soaked in a 50% methylated spirits solution or soapy

water before use to increase effectiveness. As bugs can be spread between plants I usually have two or three brushes, with some soaking in a nappy-san type solution between use.I find that any type of manual removal is easier 10 days after the first insecticide treatment so I usually do it before the second treatment (see below).

If one plant has mealy bugs, assume all the plants in this group are also infested and require treatment. Check other orchids and garden plants for infestation and treat these reservoirs of reinfection.

Prophylactic sprays, soaps and oils
The regular use of one of the sprays based on oils or fatty acids such as eco-oil, pest oil or spraying oil is a low risk preventative strategy. These can be made up from concentrates in a cheap spray bottle for regular use. Most are better for prophylaxis than treatment. They are diluted in water and sprayed on the plants, generally being considered safer than insecticides. Some insecticidal soaps can cause human allergies however.

Although most are best used as preventatives, some such as neem oil will kill bugs. They work by smothering the organism and as a protective covering on the plant to reduce the chances of re-infestation. There are many products on the market and each has its advocates. I use eco-oil. Many can also be used as a carrier and spreading agent for insecticides such as malathion.

In established disease they act as a suppressant to disrupt the cycle and minimize the infestation, often without eliminating it. In this situation they are best used with or after a course of insecticides. When using any sprays including insecticides complete plant coverage is essential. A special effort needs to be made to get the solution into the difficult high risk areas described above (usually by dribbling), both sides of leaves, stems and the surface of the potting mix. How often you need to treat will depend on how well you follow the instructions and how fast the coating is lost in rain.

Dilute methylated spirits or Isopropyl (rubbing) alcohol solutions are sometimes used in sprays but can cause damage to soft leaved plants such as Oncidiums if mixed too strong. Often rapid cooling by evaporation in hot weather does the damage. They also usually fail to treat the potting mix.

Insecticide treatment
This is similar for both pests after cleaning up the plant but some only use the oils and soaps. The common available insecticides include Malathion, Confidor and Mavrik. I usually use eco-oil as a carrier for the insecticide as it spreads better and hangs around longer. Use in the concentrations recommended for ornamental plants in a cheap 750cc spray.

Avoid using Malathion in hot weather or windy days. The cool of the early morning is ideal for spraying. Always wear disposable gloves and a mask. Take a shower and wash your cloths when finished. Use the short disposable satay stick to ensure the spray reaches down between the pseudobulbs and where the leaf starts. Then spray the entire plant including both sides of the leaves and the potting mix surface. For bad infestations and when repotting I also spray the roots for juvenile forms and replace the potting mix as this is often infected. For this reason some advocate watering rather than spraying the chemicals.

Mealy bugs have a gestation cycle which needs three treatments, 7 to 10 days apart in order to break the cycle and scale also requires multiple treatments. Both pests often co-exist so I use the same treatment program for both. During warmer months and in green houses more rapid growth means shorter intervals between treatments. I keep treated plants together during the month of

treatment to ensure they complete the program. Follow-up sprays with a preventative barrier such as eco-oil are then advisable.

As with antibiotics many bugs develop resistance to the chemicals which become less effective with time. It is more effective to rotate to a different chemical every month or two. Some people pour used coffee grounds onto the potting mix around susceptible species such as Miltonias and Phalaenopsis .This seems to discourage the egg laying stage of the mealy bug cycle but I found it messy.