



## Central Vancouver Island Orchid Society Newsletter March 2006

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***Laelia alaorii* Brieger and Bicalho. Grown and photographed:** Meetings are held September through June on the Saturday before the 4th Wednesday of each month at the Community Services Building, 285 Prideaux Street, Nanaimo, in the Maffeo Auditorium, doors open at 11:30, with the business meeting starting at 12:00 noon.

**Chris Nicholas. This dainty Brazilian *Laelia* is still relatively unknown in hobby collections, being described by Bicalho in 1976. *Orchids Australia* August 2000**

### Coming Meeting Dates:

March 18, April 22, May 20, June 24,  
September 23, October 21, November 18, December 9

### Program for March 18th

## Pests and Diseases

An AOS slide program

### Coming Events:

CVIOS Show and Sale, Country Club Centre, April 6-9<sup>th</sup> 2006

Vancouver Orchid Society Show and Sale, Richmond Curling Club, April 28-30<sup>th</sup> 2006

### Editorial:

Last meeting we passed a motion supporting the addition of a Judging Centre in Vancouver. The Region met in March and passed the motion to set up two new Judging Centres. One in Vancouver and one in Salem Oregon. In April the ASO Judging Committee will discuss the additions and then we are home free. The Vancouver Centre should be up and running in Vancouver every month starting probably in January 2007. When I discussed this topic with the members at our February meeting there were a number of people who showed some interest in the act of becoming a judge and what was involved. Further on in the Newsletter is an article from the Region on becoming a Pre-Student. If you are interested read it through and ask question at the March meeting. If I don't have the answers I know where to get them.

With the strengthening Spring sun comes the danger of leaf burn. Be prepared to put up your shade cloth or move plants back from your south facing windows as the power comes back into the sun's rays. The ugly black marks last for the life of the leaf, which can be years so take care.

The Victoria Show was a beautiful display of our glorious addiction. I will leave the report for the meeting when I am sure Laurie will give us all the details.

Cheers Mike

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**CENTRAL VANCOUVER ISLAND ORCHID SOCIETY  
GENERAL MEETING, 18 FEBRUARY 2006-03-05**

President Vivian Heinsalu called the meeting to order at 12.05pm. There were 38 members present, 1 guest and 1 new member.

The minutes of the January meeting were amended to read "CVIOS show date April 7<sup>th</sup> to 9<sup>th</sup> 2006". A motion was made by Gary Forbes to adopt the amended minutes, seconded by Jerry Suffolk; carried.

Treasurers report, Mina Philips reported bank balances of :-

General account \$2732.61

AOS account \$3410.75.

Shirley McClare moved, seconded by Suzanne Beliveau, carried.

**Committee reports.**

**Library:** Mike deLeur reported that he has the Wildcat CD update. Mike explained how the library lending

system worked.

**Program:** Mike Miller and Ralph Kirby will be making a presentation on hydroponics and orchid culture. Harry

Johnson was away so no news on upcoming programs.

**Shows:** Laurie Forbes reported two upcoming shows:

-Victoria 2<sup>nd</sup> to 5<sup>th</sup> March 2006. Laurie gave out registration forms for the Victoria show and asked members who will be sending plants for display to mark the plants by country of origin as that is the way she will be putting the display together. She also asked for suitable props to use in the display. Drop off points for plants are Dora Glover at 1212 Waddington (Thursday 2<sup>nd</sup> March), Harry Johnson at 240 Prince John Way (Wednesday 1<sup>st</sup> March) and Laurie Forbes at 1551 Fawcett Road (Wednesday 1<sup>st</sup> March).

- CVIOS show, Country Club Mall 7<sup>th</sup> to 9<sup>th</sup> April 2006. Members were asked to take posters for advertising. Laurie passed round a sign up sheet for jobs on show weekend.

**Newsletter.** Mike Miller asked member who change their e-mail addresses to let him know, and requested members to suggest articles or topics for inclusion in the newsletter.

**Plant Order.** The Floralia order is due in today, Mike will get the order off to Floralia later this week. Anyone wanting specific plants see Mike as he might put another order on later in the year.

**Membership.** Ralph Kirby has made up a membership list, it needs proofing and then will be available for distribution to members.

**Show Table.** Jose Gavieres asked that members who bring plants for display at our meetings bring a list of their plants on the form provided. At the meeting they will be given numbered tags to slot in

each plant pot. This will make it easy for her to look up the owner of the plant and it's name when she photographs the plants for the website.

**Roving Reporter.** Maureen Hawthorn reported on the Seattle garden show. For future reference there are lots of orchids on show and for sale and it might be worth looking into a group outing. The US department of agriculture was there to provide paperwork for crossing into Canada with plant material. This created a lively discussion on the necessary paperwork, CITES regulations and Canadian customs habit of confiscating orchid material.

**Show Table.** Mike Miller and Ralph Kirby presented the show table. 19 very nice plants, less than usual possibly because of the cool weather.

**Today's Program:** Using Hydroponics to grow Orchids. By Mike Miller and Ralph Kirby.

**Goodies for the March meeting will be supplied by:**

**Nan Johnson Judy Lawlor Dot Hardy Maureen Hawthorne**

**NEW CVIOS MEMBERS**

The following new member joined us in February please make him welcome when you see him.

Wayne Standbridge of Nanaimo

**Orchid Collection for Sale**

Pam Wiens has decided to sell her orchid collection of Phalaenopsis, Paphiopedilums, Phragmipediums, Masdevallias, and others

Call Pam for an appointment (250) 716-1990

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**Pacific Northwest Judging Centre  
Judge Training Program: 2006  
Pre-Student Information**

The objectives of the Pacific Northwest Judging Center (PNWJC) training program are to educate prospective American Orchid Society judges in the process and procedures used in the AOS judging system and improve their orchid knowledge. It is expected that candidates for the judge-training program will already have some experience with growing and showing orchids. In order to evaluate their readiness to start the training program, the following goals should be met.

1. The candidate for Student Judge must have a long-term commitment to growing and showing orchids. They also must be a member of the American Orchid Society (AOS) and must own a current copy of the *Handbook on Judging and Exhibition*. It is also highly recommended that the candidate have a subscription to the *Awards Quarterly* (AQ) and the *Orchid Digest*. A subscription to the *Wildcatt database* program is also recommended.

Once a candidate is accepted into the judge-training program, they should purchase a copy of the *AOS Awards Combined Index*, available from the PNWJC or the AOS Bookshop and updated periodically, currently the price is about \$20.00

Currently, single membership in the AOS is \$46.50/year, \$84/2 year; Non-US single membership is \$56/year, \$102.50/2 year. The *Handbook on Judging and Exhibition* is available from the AOS Bookshop in Florida, with a member discount, 561-404-2021 or [www.aos.org](http://www.aos.org), \$10-15, plus shipping. The AQ is published four times a year, single membership currently is, \$45 for AOS Members and \$50 for non-US AOS Members.

2. In order to evaluate their orchid knowledge, the candidate for student judge is asked to complete a PreStudent quiz. The questions include naming AOS awards, parts of common orchid flowers, writing correct hybrid and species names including award among others items. It should not be difficult for a person who is ready for Student Judge status to attain at least 80% correct on this quiz because the questions cover only basic orchid knowledge.

3. The candidate is also asked to identify and correctly spell at least 80% of a slide show containing at least 50 orchid species commonly grown and exhibited at shows in the Pacific Northwest. The quiz and slide shows are held the month prior to the business meetings. Currently the quiz months are May and October. A candidate may take the slide show and quiz more than once, if necessary, but different versions will be used. A list of common "building block" species, often used in hybrids, from which the slide show is selected, is available.

4. It is expected that a candidate for student judge has attended at least several Center judgments where they have observed a judging team's work. It would be helpful if the candidate has attended and acted as an observer at least 1/2 the regularly scheduled PNWJC monthly judgments in a year's time (6).

Since AOS Judges are required to attend a minimum of eight judgments every year and at least four must be monthly judging sessions; prior attendance at PNWJC judgments indicates ability and willingness to participate in the region-wide activities of the PNWJC.

5. It is helpful if the candidate has worked as a ribbon clerk in a minimum of five different orchid shows. It is also helpful if the candidate is currently active in their local orchid society and has held at least one office in their society.

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6. The PNWJC is in the process of opening two new judging sites in British Columbia and Oregon in addition to the current site at the Neighborhood Center in Tacoma, Washington. Until those new sites are opened, monthly judging sessions are held at 1 pm, on the third Saturday of every month, in Tacoma. When other judging sites open, their monthly sessions may be on a different day and time.

There are two business meetings every year, currently held in June and November, on the third Saturday, in Tacoma, Washington. The business meeting is held on Saturday morning, the monthly

judging session on Saturday afternoon. Currently, there is a dinner meeting with a one-hour training session Saturday night. Training sessions are held on the following Sunday in June 8 am-noon and in November 8-2 pm. All judges must attend, unless excused by the Center Chair

Judges from the PNWJC have the joint responsibility for orchid shows in Alberta, British Columbia, Washington, Idaho, occasionally Montana, Alaska and Oregon. Currently, there are 18 scheduled shows, clustered mainly in the spring and fall, throughout this region. We volunteer to share this responsibility in order to comply with the AOS Mission Statement to "organize and maintain an orchid judging system."

7. The judge-training program is divided into two portions. A student judge's training period is a minimum of three years and a maximum of five years, as described in *the Handbook on Judging and Exhibition*, page 23, section 4.2.1. If the student judge is not advanced at the end of five years, the student shall no longer be permitted to judge and their service will be terminated. If the student judge is advanced to probationer judge, they must serve a minimum of three years or a maximum of five years at this grade, before being advanced to accredited judge.

Currently, there is one year of monthly homework assignments meant to familiarize the new student with AOS judging procedures. There are six take-home quizzes that will be used, during the following two years, after the homework is finished. And, twice a year, during the month prior to the business meeting, short non-open-book quizzes, relating to the homework questions and geared to the student's progress are administered. At the same time, a slide quiz as described above is also given. All of the PNWJC judges are invited to participate in this portion of the training session.

Finally, during their training periods, the student and probationer judges are asked to present two judging-related programs at the twice-yearly training sessions. One program topic is assigned and one selected by the student with assistance from their Advisors.

Tip: traveling in groups is fun and a good way to share the cost of gasoline and motels, when necessary.

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## **Pest and Disease Control with Home Remedies and Magic Potions**

Presentation by Dr. Don Garling, Michigan,  
from notes taken by Inge Poot

Orchid diseases can have physiological, nutritional, cultural, viral, bacterial/fungal or parasitic pest infestations as their cause.

An example of a physiological cause could be a genetic defect that prevents a plant from blooming. An example of a nutritionally caused problem could be the same lack of flowering caused by a fertilizer that is not right for the medium the plant is grown in. For instance a high nitrogen fertilizer is fine for a bark based medium, because decaying bark uses a lot of nitrogen, but the same high nitrogen fertilizer used on a plant in an inert medium such as expanded clay pellets may result in a lot of green growth but no flowers.

Correct culture is of paramount importance, because with incorrect culture the plant is stressed and will fall prey to pests, diseases or mimic physiological defects or show nutritional deficiencies. Don recommends the fertilizer put together by John Beerbaum for the Michigan State University. It comes in two formulations, one for deionized water and one for-the well water in use at MSU. He has

had fantastic results with it and has seen equally impressive growth spurts in other peoples' greenhouses as a result of switching to this formulation. (Previous speakers Dick wells and Lynn O'Shauriessy confirmed this opinion) (I cannot say that I have noticed any difference between it and the Plant Product fertilizers I have been using Ed.)

For a plant to become diseased you must have a susceptible host plant, have a pest or pathogen present and stress the plant in some way.

Stress can be defined as any condition that predisposes a plant to disease. Such conditions could be: keeping that plant colder than optimal, warmer than optimal, too bright, too dark, too wet (causes roots to die), watering with poor quality water or injuring the plant. Also remember that what is optimal for one plant is deadly for another. Grow what fits the conditions you can provide.

**To deal with disease: The best strategy is prevention!** Quarantine newly acquired plants for 3 to 4 weeks to prevent spread of anything they may harbor. Try to pick out healthy plants! And only buy plants that grow well under YOUR growing conditions (easier said than done!!). For instance if your growing conditions provide wet winters then don't get Chinese Paphs. or brachypetalum Paphs. because they will rot on you in the winter.

Have...plant police...inspect all plants given for auctions, raffles, plants contributed to an exhibit in our annual show or for...display in-another show and sales table plants. If a problem is spotted the owner should be tactfully asked to remove the plant.

Study the correct culture of your plants. For instance Cattleyas need good drainage and drying between watering to not rot, while Masdevallias never want to dry out. Knowledge is power! Purchase the newest AOS Handbook on Orchid Pests and Diseases. The recommendations change as the available treatments change. There is a good book on Orchid Viruses and one on Natural Insect Control available that are essential reading. Try the AOS mail order bookshop, as their selection is extensive.

Never dunk two or more plants into the same container of water. It is a great way to spread diseases from one plant to all the plants that are dunked into the water the diseased plant had been immersed in.

To treat a disease, you have to know your orchid. What cultural conditions it needs, what it is susceptible to and how the disease shows tip in the particular orchid. The same cause shows different symptoms in different genera.

For example, Cattleyas are susceptible to viruses and you must find out what the symptoms are. They are also susceptible to boisduval scale. Phalaenopsis on the other hand are susceptible to virus, to mealybugs, especially nasty are root mealybugs, as well as brown scale, botrytis of the flowers in cool weather and false spider mite in dry environments.

Always be on the look-out for signs of disease so that you can catch it early. If yellow spots appear on leaves check on the reverse and identify the causal agent. Know the life cycle of pests and diseases so that you can look at the right time and place for the particular agent of disease. For instance, scales have a crawler stage and an adult stage where the latter protects the eggs under its body shell. Now (January) is the time to look for boisduval scale, because the crawlers are hatching fast and furious and must be controlled quickly to save Cattleyas and other genera such as Cymbidiums.

You have to know how a pest or disease agent is transmitted so that you can take precautions. You must also know how to control the disease agent. For instance, control aphids because they not only damage soft plant parts, but transmit viruses between plants.

### **Virus**

There is no cure for it, therefore burn infected plants. However, there are virus look-alikes and you must make sure you do have a virus by having it tested. Virus look-alikes can be genetic abnormalities, some fungal and bacterial infections, mesophyll collapse (may be caused by cold water shock- to prevent it use a faucet attachment that contains a thermometer, as is used in bathroom shower heads and get continuous adjustment to a pre-set temperature), botrytis petal blight, sepal wilt (caused

by such things as alcohol in the air), sunburn, tip bum (can be caused by over-fertilization or fungus infection) and insect damage such as false spider mite damage.

**Virus Detection:** Can use indicator plants, but it is not easy to do it correctly (the juice of the tested plant must be rubbed onto the leaf of the indicator plant with Carborundum powder using just the right pressure so that the epidermis is ruptured but not so hard that the mesophyll collapses and the injury can't be told apart from the collapse caused by the reaction of the indicator plant to virus infection. Also the indicator plants are not always easy to get or grow.)

A better method is anyone of several biochemical assays done by various labs. The most frequent test is the ELISA test (Enzyme Linked Immunoabsorbent Assay?). The test method is examining a sample of the plant in question with an electron microscope. Bean mosaic virus for example is easy to see with this microscope. You may make a deal with a lab or a university to get it done, because you have to be trained to use such a microscope.

Many plants are symptom free but carry a virus anyway. It has been estimated that 30% of any collection is virused! It used to be said that Paphiopedilums do not get viruses, but a recent test of a Paph collection came up with a 4% infection rate. Plants long in cultivation and used for the cut flower trade are most likely to be infected. For instance Paph. King Arthur from the tested collection was infected.

**Virus Transmission:** Manual transmission by the use of unsterilized tools, pots, tabletops, benches, hands, reused water for watering several plants, is the most frequent cause. Insect transmission as mentioned before for aphids, is also a frequent cause.

Propagules are also found on seeds harvested by green pod culture, in divisions of virused plants and in mericlones obtained from virused plants. The latter source is responsible for the huge increase of virused plants in collections, since mericlones were first produced in an attempt to rid a plant of a virus. It does not work for most genera. If carefully done it sometimes works for Cymbidiums.

**Virus Control:** Purchase only plants from vendors that guarantee their plants to be virus free. Check periodically, since the status of these guarantees can change.

Test all suspect plants. Suspect plants that show symptoms, large showy plants, (because they get into contact with more plants and can become infected more frequently), older hybrids and older mericlones.

Prevent transmission by sanitation, insect control and by avoiding overcrowding.

### **Bacterial and Fungal Rots**

There are more than a hundred species of bacteria and fungi that are a problem with orchids. Most bacterial rots are wet and mushy such as crown rot in Phalaenopsis, but the dry rusty leaf rot of Paphiopedilums is also bacterial. Most fungal infections are dry, not mushy such as the shot hole fungus found on some soft leaved orchids. Remedies, see later.

### **Scale Insects**

Mealy bugs are scale insects that have mobile adults. The root mealybugs are very hard to control without systemic insecticides. Cinnamite works better than most chemicals, probably because the alcohol it contains gets through their waxy covering.

Brown scale has mobile crawlers or immature stages. The crawler stage is the only stage that can be attacked with the methods available to the ordinary householder. It has to be sprayed once a week, repeat to a total of at least three times. You can use the light oils (not dormant oils!), neem oil with dishwashing detergent (more on this later) or cinnamite (Home preparation, later).

### **Thrips**

Nymphs and adults cause damage. See streaks or a picotee on pink or lavender flowers. (An ignorant vendor liked the picotee and sold such infested plants for a higher price at a show until alerted by someone that the picotee was not genetic!!)

Thrips are attracted to blue. To know if you have them get blue sticky strips or paint some blue cards with tanglefoot and hang amongst suspect plants. Little black specks on the card after a day or so indicates the presence of this pest.

### **Mites**

Are very tiny and most species cannot be seen with the unaided eye. The two-spotted mite can be seen and it also leaves webs that are easily spotted. They cause silvering of leaves by sucking out the cell content from the skin of the plant. Cinnamite works well with this pest. Spay 3 times two days apart, since this pest has a fast life cycle. Switch amongst 2 or 3 chemicals for further treatments to prevent the development of resistance.

### **Slugs and Snails**

Signs of their presence are holes in plant parts, flowers especially, thin glistening slime trails and pieces missing out of the plant.

Copper wire wound around areas to stop them at, work so do 10 centimeter high copper sheets get expensive when used as barriers. Metaldehyde sprays work well, but are quite toxic to other animals and children. The best is Iron phosphate for snails and slugs from Safers. Non-toxic to other animals and plants and very effective.

### **Water**

Know the water you use on your orchids, since it has a large impact on your culture. If it has a high pH the chemicals of your fertilizer will precipitate out resulting in deficiencies whose symptoms might be mistaken for virus. Also if your water contains a lot of carbonate, copper fungicides do not work because the copper combines with the carbonate and precipitates out.

If you use rainwater or Reverse Osmosis (R-O) water, you should use continuous low rate fertilization otherwise the pure water will leach all the nutrients out of your pots and the plants starve.

### **Physical Treatments**

Removal of pest or diseased portion works well in many instances. Aphids can be sprayed off with a strong spray of water.

To prevent fungus spores from settling on your plants, increase air movement. Don't water when it is cold and wet, because fungi and molds sporulate at that time. Water early in the day and provide lots of fans so that surfaces dry off quickly. Smothering agents work well, but must be used with caution because they can kill plant-parts if sun shines on the treated part too soon. To prevent this phototoxicity of parafinic oils such as "Ultrafine" use on overcast or rainy days only.

Pepper is an insectal antifeedant. Neem oil contains an antifeedant and an agent that prevents metamorphosis and on top of that it smothers the insects. (More later)

### **Home remedy for mites and scale insects:**

1 teaspoon to 1 tablespoon of light oil such as canola oil or light mineral oil

1 teaspoon rubbing alcohol

1 teaspoon Ivory soap (from Health Food store, because the newest version in the grocery stores contains all sorts of other stuff)

1 quart of water.

Spray every day for two weeks for mites and every day for 3 weeks for scale insects

### **Chemical Treatment Evaluation**

We have to determine how effective it is in controlling the pest or disease and weigh that against the toxicity. There is also the problem of its legal use. The only legal use is that stated on the container.

Enstar (very effective against the insect order that contains aphids, scale insects, mealy bugs and. white flies) may be used one time according to the container, but one person on the internet recommends using it once a .week!!

Also orchids are not often mentioned on containers, because until recently they were not commercially important enough. However, whenever pot plants, house plants, ornamentals are mentioned, we can legally consider the use on orchids to be legal too, because orchids belong into all of those categories. But be sure to try the chemical on a few plants you can afford to lose first, before spraying the whole collection. Also remember not to overtreat. The chemical is a poison and the higher the rate used, the higher level the organism that gets killed or harmed by it.

Some chemicals mimic the action of a hormone (eg. Enstar) and in hormones, dose is crucial. So use at exactly the rate recommended and don't use old outdated chemicals.

Do dispose of them safely, they could do enormous harm, because hormones work at minute concentrations. Find out where the local hazardous waste pickup site is and take all discarded pesticides there.

Always LABEL the containers that you store your chemicals in. It *is* amazing how quickly we can forget the content of a container that we were sure would forever remain in our memory.

NEVER store pesticides in cold drink bottles. It could cause the death of a child.

### **Evaluation of Home Remedies**

#### **Snail and Slug Control:**

- Beer is not useful, since they crawl out again by morning!
- Potato -- cut and place cut side down on top of bark. Pick off catch in morning and drop into alcohol or saturated salt solution.
- Yoghourt -- put on platter and fish out catch in mornmg.
- Salt -- forget it, it harms plants.
- Copper wire – won't crawl over it most of the time, but when mating the slime gets thicker and they ignore the wire. (10 centimeter wide thin copper strips were not mentioned by Don.)
- Diatomaceous earth - gets washed away with each watering.
- Flash light and chop sticks -- hunt at night and pick up with chop sticks and drop into alcohol. Reduces numbers only.
- (Metaldehyde works but is dangerous, Safers Iron phosphate is the best bet)

#### **Ants:**

They spread aphids and scale insects around, since they farm them for the fluids they "milk" out of them. Spread boric acid powder (Borax ) for control. They- will ingest it when they clean themselves and dehydrate to death.

### **Remedies to fight both Insects and Diseases**

- 70 to 90% isopropyl alcohol- spray every 3 days for two weeks or dab onto pest with cotton wool swab.
- If you must use something new; try it on a few plants of every genus first and only use it on the rest of the genus if the test plants survive.
- 3 to 5% hydrogen peroxide is a great fungicide and bactericide. Buy only small quantities at a time, because once the bottle is opened it very quickly denatures into plain water!
- Cinnamon and cloves are great bactericides and fungicides. You can apply the powders directly to the affected area or make a poultice with flour or with Ehner's glue and apply or you can make an extract using two tablespoons of cinnamon in a pint of isopropyl alcohol, let it sit two days in a fairly warm spot, then decant off the liquid and spray with it on a dull day. This liquid works well for mites and mealybugs as well.
- Fill a bucket with good sphagnum moss, and then fill it with warm water. Let it sit for a few

days and then use the decanted water as a fungicide and bactericide. This recipe came to Don from Dick Wells and Dick uses a cup of the decanted water per repotted plant to water it in and reduce infections through the wounds made by the repotting.

### **Disinfectants (Not for Plants)**

- Bleach - a 24 hour soak of utensils in a 10% solution, rinsed two times, with plain water before use works well.
- Saturated solution of Trisodium Phosphate - use 1 to 4 tablespoons per US gallon. Spray monthly to keep down spores, but don't use with a metal greenhouse, because the solution corrodes it.
- Heat inactivation - heat utensil to 300 degrees Fahrenheit for one hour, or hold into flame of a propane torch until red-hot. But buy one of the short, squat cylinders, because the tall cylinders are too tippy and you could burn yourself, your clothing or the house!
- Use disposable razor blades for cutting.
- To sterilize scissors hold each side of each blade into the flame for 3 to 5 seconds. Use the thicker bladed scissors to make them last longer. Don himself has 25 pairs of scissors that he uses one after the other and then sterilizes when he has some time.
- Work on sheets of old newspaper and throw each sheet out after being used to work on one plant.
- Use rubber gloves which can then be washed with physidex(?) which is a fungicide, bactericide and viricide after handling each plant.

### **Botanicals**

Many botanicals are just as toxic as man-made chemicals and must be used with extreme care.

- Pyrethrum is safe for mammals but is very, toxic to frogs and fish. So don't kill your resident frogs and toads or the goldfish you are over wintering in the plant room.
- Rotenone and nicotine are toxic for us too.
- Neem oil - not all formulations are equally effective.
- Safer's Bio-Neem seems to contain only the azadirachtin component of the oil and Don has not found it to work. He suggests we get it from sources that have the thick, brown oil and use it at the rate of 1 to 3 tablespoons per American gallon of warm water. Use the higher rate for thick leaved plants. As mentioned earlier it contains an anti-feeding and an antmolting agent. Use one tsp. alcohol and one tsp. liquid detergent as an emulsifying agent with it.

### **Synthetic Pesticides**

Cygon -2E will be withdrawn shortly because it is too dangerous. It also caused genetic defects. It was the best killer for mealybugs, because you really need a systemic to eradicate them.

There is a new systemic available hi the USA which can be used if you are desperate! It has the trade name Marathon, but costs US \$300 for quite a small amount. It is used as a drench at the rate of 1 to 3 tablespoons per gallon.

You should note that the front panel of a pesticide container contains the cautions for its use. If it says "Caution" it means it is slightly toxic to anyone. If it says "Warning" it means it is moderately toxic and may be restricted to licensed operators for its use. If it says "Danger/Poison" it is very toxic and the user must follow all precautions and may only be used by certified operators.

The back panel gives detailed use information, such as the plants it may be used on, the dose for various species and storage information such how to store it and for how long and how to dispose of container and/or unused outdated portions.

I have lost the source of this article but think it may have come from the Manitoba Orchid Society