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PESTS, PATHOGENS AND THEIR CONTROL IN BROMELIAD HYBRIDS A GROWER'S PERSPECTIVE

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Abstract. **Kerry's Bromeliad Nursery was incorporated in 1974 and in 1980 established at 21840 SW 258th street in Homestead Fla. In 1992 the facility was completely leveled by hurricane Andrew. Since that time Kerry's has re-established itself and is currently ranked at 23rd in the Nation by Greenhouse Grower magazine. We currently employee around 200 people. The Homestead facility currently has in excess of 1.5 million square feet of growing area. We have also established a facility in Apopka Florida which has one million square feet of growing area. Our facility in Apopka is utilized primarily for Orchid production. Our Homestead facility is utilized for Orchid and Bromeliad production. Current Bromeliad production stands at around 1.6 million units annually, orchid production is in excess of 2.5 million units annually.**

Over the years we have fought many battles in regards to insects, pathogens, and abiotic (non pathogenic) issues in the production of Bromeliad hybrids. Although not all production take's place within a shade house structure, a large percentage does. As you can imagine this creates some ideal conditions for insects and pathogens to thrive during the hot, wet summer. For example, during the summer of 2002, there was in excess of sixty-seven inches of rainfall at the Homestead location. I will cover some specific issues, some that even today require constant attention and others that at one time caused considerable losses but today are considered rare occurrences as long as proper control methods are applied.

Cyclamen Mite in Tillandisa Hybrids

Whether you are importing hybrids that are clones or vegetatively propagated plants, cyclamen mites will still be an issue. In other words, if the plants arrive free of cyclamen the odds are that over time you will develop the problem. Although winters are considered mild in south Florida, cyclamen mites only become a serious issue from March through November. Symptoms appear on the inflorescences creating serious distortion. Current preventive measures are as follows. Notice under status I've listed each as old or new, new referring to products recently added to the rotation (Table 1).

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Rhizoctonia in Tillandsia Hybrids

For many years the battle raged during the hot, wet summer months with this pathogen. This pathogen, once established, moves rapidly throughout the crop. Rhizoctonia accounted for the majority of loses within this genus. Every fungicide that did not show any form of toxicity was thrown at this pathogen. Then in 2002 I began trials with a new fungicide named Heritage. During the period between March and July of 2002, I applied this chemical as a drench application, by June of 2002 there were no signs of Rhizoctonia within the population. Therefore this pathogen is no longer considered a major issue in the production of Tillandsia hybrids (Table 2).

Two Spotted Spider Mites in Vriesea Hybrids

Spider mites are one of the continuing problems for which there is control but it requires constant monitoring. Miticides are one of the more frequently used insecticides on Vrieseas during the warmer months of the year. Due to the soft tissue of the plant they are desirable to mites at all stages of vegetative growth. The following products shown in Table 3, used in rotation, yield desirable results.

Scale Insects in Vriesea Hybrids

Scale insects have always been a nightmare especially when production is taking place in a shade house environment. The extent of the problem generally is directly related to cultural practices. Poor cultural practices can make this pest more difficult to control if not impossible. Lack of adequate spacing is the major contributor to heavy infestation. The overgrown canopy and the microclimate it creates are ideal conditions for this pest. It is very difficult to penetrate the canopy of plants that are tightly spaced and overgrown. Although there are systemic insecticides that can be incorporated into the media for control, it is difficult to justify the cost of these chemicals. Therefore maintaining adequate spacing and developing a sound preventive program is a must (Table 4).

Cylindrocladium in Vriesea Hybrids

Again, good cultural practices come into play. Cylindrocladium is a pathogen that if it goes unnoticed can cause a lot of damage in a short period of time. My only encounter with this pathogen was again during the hot wet season; the plants were

Table 1.

Common name	Chemical group	Active ingredient	Status
Floramite	Bifenzate	Bifenzate	Old
Sanmite	MECI acaricides	Pyridaben	Old
Avid/Ovation	Avermectin/clofentezine	Abamectin/clofentezine	New
Scimitar	Pyrethroid	Lambda-cyhalothrin	Old

Table 2.

Common name	Active ingredient	Status
Heritage	Azoxystrobin methyl	Old

overgrown and did not have adequate space. The difficulty with this pathogen is that it starts beneath the canopy and can go unnoticed until the pathogen is well established. Fortunately, if you are caught in this situation it can be brought under control rather quickly. First thing is to dispose of material that is considered unsalvageable, this does not mean all plant material that is symptomatic, the pathogen can be brought under control even on plants that are infected. The next step is to increase the spacing of the plants in order to get adequate air movement and allow for good penetration for your preventive application. Next apply fungicides as a sprench application. The term sprench is used for application that fall between foliar and drench. Normally I use a 4 gpm water breaker attached to a watering wand for this application. The following fungicides should be tank mixed and require two to three applications over a period of eight weeks (Table 5).

Helminthosporium in Guzmania Hybrids

Another pathogen that at one time caused considerable losses but is no longer considered a major problem is helminthosporium. The key to this pathogen in south Florida is timely preventive applications prior to spores being present. Two fungicides are applied starting no later than the end of February and continuing through June. Banner MAXX should be used in conjunction with Dithane for at least three applications, once every six to eight weeks through this time period. These chemicals have been used here at Kerry's for some time yielding poor results in regards to this pathogen. Only after establishing when applications should take place were we virtually able to eradicate this pathogen (Table 6).

Scale Insects in Guzmania Hybrids

I included this although I previously covered this issue on scale insects in Vriesea hybrids. Everything discussed previously pertaining to Vriesea hybrids applies here, with the exception of two additional insecticides. These insecticides have the potential to have some toxicity in the genus Vriesea but have no effect on Guzmanias. Never assume that a Bromeliad is a Bromeliad. There are very distinct differences between not only different genera, but at times within the same genus in regards to plant tolerance. The two additional chemicals used are shown in Table 7.

In closing, you will notice that although I have listed specific chemicals to be applied for preventive applications, I also excluded the rates for these chemicals. The rates are dependant on the type of applicator that you choose to utilize. Also you have to take in account the environmental conditions in which you are growing. This comes with experience. The chemical applications listed perform well for me under my growing conditions and are offered only as a suggestion. My advice is if you encounter something unknown to you it is well worth the nominal fee to take a sample to your local research station for analysis. If you have any questions please feel free to contact me at 1-800-331-9127 or e-mail me at jsteele@kb-inc.com.

Table 3.

Common name	Chemical group	Active ingredient	Status
Avid	Avermectin	Abermectin	Old
Sanmite	METI acaricides	Pyridaben	Old
Floramite	Bifenzate	Bifenzate	Old
Scimitar	Pyrehtroid	Lambda-cyhalothrin	Old

Table 4.

Common name	Chemical group	Active ingredient	Status
Dimethoate	Organophosphate	Dimethoate	Old
Orthene	Organophosphate	Acephate	Old
Scimitar	Pyrethroid	Lambda-cyhalothrin	Old
Talstar	Pyrethroid	Bifenthrin	Old

Table 5.

Common name	Active ingredient	Status
Cleary's 3336 WP	Thiophanate-methyl	Old
Dithane	Mancozeb	Old

Table 6.

Common name	Active ingredient	Status
Banner MAXX	Propiconazole	Old
Dithane	Mancozeb	Old

Table 7.

Common name	Chemical group	Active ingredient	Status
M-Pede	Biological soap	Potassium salts/fatty acids	New
Distance	Juvenile hormone	Pyriproxyfen	Old