McHort Technical information

Pesticides/fungicides compatible with Hypomite.

Insecticides:
Applaud
BT's
Rogor
Insegar (Fenoxycarb)
Confidor spray
Avatar
Malathion
Prodigee (Methoxyfenoxide)
Neem
Pirimor
Chess
Natural Pyrethrum
Plant soap PS1
Success
Mimic
Sulphur

Miticides:
Kelthane
Pyranica
San-Mite (Pyridaben)

Fungicides:
Benlate
Spin (Carbendazim)
Mancozeb
Ridomil
Saprol
Afugan (Pyrazophos)

For more information contact:
Donald McPherson on 021 782250

McHort **TECHNICAL BULLETIN**

CHEMICAL 'CLEAN-UP' SUGGESTIONS PRIOR TO THE INTRODUCTION OF BENEFICIAL INSECTS & MITES

PEST	CHEMICAL
Red spider mite	AVID[1] OMITE[o] TORQUE[o] MIT-E-MEC[1] PS1 PLANT-SOAP[1] SUNSPRAY OIL
Whitefly	APPLAUD[o] NEEM[o] CONFIDOR[3] drench CHESS[o] PYRETHRUM[o]
Mealy bug long tailed	CALYPSO[o] APPLAUD[o] NEEM[o] PYRETHRUM[o]
Mealy bug root	
Sciarid fly	CONFIDOR[1] CONFIDOR[3] drench PYRETHRUM
Aphids	NEEM[o] PIRIMOR[o]
Scale	NEEM[o] CALYPSO[o] SUNSPRAY OIL PS1 PLANT-SOAP[1]
Thrips	NEEM[o]
Caterpillars	B. thuringiensis[o] SPINOSAD[1] MIMIC
Black vine weevil	CONFIDOR[3] drench CHLORPYRIFOS[1] drench

WITHHOLDING PERIOD , THE INTERVAL BETWEEN THE LAST APPLICATION AND THE INTRODUCTION OF A BENEFICIAL INSECT OR MITE.
[o] NIL [1] ONE WEEK [3] THREE WEEKS

Information, advice, supply

Product support information from McHort

Hypoaspis sp.—Mite predator

Use:
For suppression of harmful insects in the root zone of container grown ornamentals during propagation & beyond.
Eg. Sciarid fly larvae, thrips pupae and root mealy bugs.
Also used in the UK against Black vine weevil.

Description:
Hypoaspis is a brown coloured predatory mite growing 1mm in length. In the larvae or first nymphal stage it is white. The mite has long legs and a strongly pilosed (hairy) back. Mite eggs hatch after 6 days at 20C. Development from egg to adults takes 17-18 days at this temperature. The mites remain active at temperatures as low as 10C. They are native to NZ and survive at even lower temperatures

Diet:
Hypoaspis sp. has a varied diet consisting not only harmful soil insects but also mould mites. Mould mites are regarded as being non harmful in commercial potting mixes and exist in large numbers. This plentiful food supply will sustain Hypoaspis sp. mites for months. Hypoaspis sp. mites are reported to live for up to 70 days even in the absence of food if they have previously been fed.

Habitat:
The mites colonise soil and potting mix and can be observed at the base of plant stems. They prefer moist warm conditions. As they seldom climb the plants aerial pesticide applications to your crop are unlikely to substantially adversely effect predator mite populations.

Compatibility:
Many foliar applied insecticides can be used without harming the Hypoaspis sp.predator mites. For a list of the best choice contact us for more detailed information.

Application:
Apply at the rate of 1g/ litre of container volume to the surface. Use as a preventative in the propagation stage, on seed & cuttings trays and on GOL's. 1 Pack will treat about 90 propagation trays. Reapplication should only be necessary when plants are potted off or up into new mix. Reduce adult Sciarid fly populations with insecticide spray before introducing Hypoaspis sp. Natural Pyrethrum is the prefered choice. Observe a withholding period of up to 3 days after the last insecticide application. Contact us for suitable insecticides with the shortest withholding period

Pack size: 1 litre

For supply call 021 782250 or fax 07 8238331 or e-mail mchort@xtra.co.nz

NATURAL SOLUTIONS TO THE CHALLENGES OF INTENSIVE CULTURE

NURSERY 'KNOW HOW' :

#10 Sciarid fly (Fungus gnat)

McHort KNOW HOW
McPHERSON HORTICULTURE

Sciarid fly (fungus gnat) has become widespread throughout nurseries in New Zealand. I have rarely,in the last decade, visited a property without identifying the presence of this potentially serious pest. For too long, growers have been complacent about Sciarid fly, overlooking the significance of the potential damage it causes.
The damage is not always apparent or clearly attributed to the seemingly innocent adult fly stage. Often growers tolerate the presence of significant populations, even 'clouds' of the small bodied adult flies, which are most commonly found under benches and on the surface of algae covered potting mix.

Attracted by moss and algae
Sciarid fly can be found wherever green algae or moss grows. Unseen, but creating havoc below surface, are the Sciarid fly maggots, feasting in the root zone of the crop you are growing. Most vulnerable are young seedlings and rooting cuttings. Sciarid weaken your plant stock, reduce vigour and the injury they cause can invite serious root rot problems later, most notably ***Pyhtophthora*** and ***Pythium.***

Your propagation facilities provide a warm and moist environment, capable of sustaining large and very attractive moss and algae growth. It is this growth that attracts the Sciarid. Organic matter, your potting mix, sustains Sciarid if we allow it to become infested. The mist or overhead irrigation, when combined with shade and plant nutrient supply, efficiently spreads and promotes the growth of the attractive moss and algae. So, how should we deal with this pest?

Using chemicals
Synthetic pyrethroid fly sprays may knock down the adult fly although some growers report suspected resistance.
It may be necessary to use even more toxic insecticides such as Karate or Confidor. The Sciarid has a relatively short life cycle and new adults emerge in just days. Hitting the adult is not enough! Frequency of application and cost means that the use of insecticides is best limited to reducing out of control infestations before adopting other strategies.
Adding a poisonous organo-phosphorous compound to the potting mix is expensive and creates a hazard to those who must handle the potting mix.

Integrated methods
A more astute approach would be to integrate a package of measures. The strategy should include monitoring pest populations, removing moss and algae and instigating an on-going biological control programme.
It is unrealistic to expect eradication. Sciarid flies are a part of the natural order and will soon re-infect unprotected host material. Tolerance at a low level should be acceptable and unlikely to reduce crop performance.

An integrated strategy
Clean up production areas targeting any green moss or algae growth. Employ a zero tolerance to it.
Try Yield or Surrender®, these contact biocides will selectively and safely remove viable spores and existing growths. Just keep them away from ferns and other valuable plant material propagated from spores.

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NURSERY 'KNOW HOW' SERIES : #10 SCIARID FLY (FUNGUS GNAT)

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#10 Sciarid fly (Fungus gnat)

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Avoid accumulation of old potting mix under benches or on capillary mats. Sciarid fly will make a home here. Try to quarantine very slow germinating seed. The mix they are in will attract Sciarid.

Using yellow sticky traps
Hang sticky traps 150cm above your indoor crops. Use 1 trap/sq m in the propagation house and 1trap/15-20 sq m in the growing on areas. Check them every 3-4 days marking trapped insects with a bold marker pen dot so as to monitor population fluctuations.

Chemical versus biological
Consider a knock-down spray of Natural Pyrethrum for the initial control of large infestations. Repeat at 3-4 day intervals 3 or 4 times in succession. Use either Dimilin® 25W and or the natural predator Hypoaspis sp. in your mix. Dimilin® acts by preventing the adult Sciarid fly from emerging from the pupal stage.
Hypoaspis is a predator mite which will be sustained in your mix for several months by feeding on ever present mould mites or Sciarid fly maggots and other pests if present .Both methods are slow to take effect, so be patient and continue to reduce moss and algae and spray any adult fly. Hypoaspis sp. is produced in a medium of peat and vermiculite. This is applied on top of the growing media. Use it at 1kg/cu metre. It is unaffected by many aerial pesticide applications except synthetic pyrethroids (e.g.Karate), and will be harmed by drenches or incorporated insecticides e.g. Diazinon etc.

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Insecticides such as Suscon® Green, Baricade or Confidor® have been added to potting mix to eliminate Sciarid fly with only limited success. They seem to work best only after several months of building uo release into the growing media. Wearing gloves when handling such mix is strongly recommended.

Chemical insecticides in potting mix
Not everyone is happy to handle potting mix with chemical pesticides in them. Biological pest control is not only viable, it is eminently practical and safer too.

The economics of using Hypoaspis
Hypoaspis is a viable control method once allowed to establish, but is most economical when used in propagation and tube stock rather than in final containers.
An exception might be when valuable stock or display plants are held over in the same container for several years. Hypoaspis can be applied to the top of the container at the rate of 1g/litre.
The Hypoaspis mites will quickly go down into the root zone. Check with us about compatible chemicals and withholding periods before introducing Hypoaspis.

Have patience
Although gratifying, a quick chemical solution to an ever present pest problem like Sciarid, is rarely successful, or sustainable. In general, the more toxic, that is effective, chemicals are potentially harder on your plants and certainly indiscriminate towards other beneficials within the growing system. I recommend you persevere with the biologicals and cultural technique fine tuning.

NURSERY 'KNOW HOW' SERIES : #10 SCIARID FLY (FUNGUS GNAT)

NURSERY 'KNOW HOW' :

#12 Biological pest & disease suppression

McHort KNOW HOW
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NURSERY 'KNOW HOW' SERIES : #12 BIOLOGICAL P&D SUPPRESSION

I have long been a champion of developing and promoting better ways of growing healthy plants. I believe in a future less reliant on chemicals as being the future direction for our industry.

The strategy I believe in is a composite of three component parts :

Cultural , Biological and Chemical
Their integration is, in my experience, both tenable and viable. The challenge is to develop techniques which produce acceptable results in a practical production environment.

These are the tactics used to execute the strategy.
You should note the order in which I have arranged my components. My philosophy encompasses the use of chemicals, as I'm a realist, but only after due consideration of all other options.

An example is how the industry today deals with the once very significant disease problem, Botrytis. Twenty years ago *Botrytis cinerea* may well have been disease # 1 in protected cropping systems. Today it rarely rates a mention.
Why? The practice of the day was to protect plants and eradicate Botrytis using the very successful chemical Benlate. This high performance chemical was legendary .
Exclusive and repeated usage in many spray programmes has resulted in the build-up of Benlate resistant strains of fungi.
A period of bad publicity on another issue further damaged its reputation.
With the effectiveness gone and no immediate replacement available, we had to find out how to work without it. We did.
Practice changed and today Botrytis is largely controlled by better use of ventilation and humidity control, not chemicals. The lesson being, use of a chemical may be easy and available, but is it necessary?.

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Sometimes there is another, better, way.
1.Cultural technique
Consider these tactics when you next review your plant protection policy.

Ask yourself these questions:
Do I accurately know with which disease/s I am dealing?
Seek professional help with identification.

What do I know about the conditions that favour and promote the incidence of this disease?
Research the disease or seek help.

Which of my crops are vulnerable to this disease?
It may be a problem limited to an insignificant part of your crop and easily fixed by ceasing production of those plants.

Common areas of the cultural practice that will come under review will be:
Irrigation regime
Potting mix physical and chemical make-up
Hygiene
Pest control
Crop handling, etc.

Another common nursery practice which can cause disease problems is root pruning.
Ask yourself, is root pruning necessary?
Is it perhaps only because stock has been held too long before potting-on?
Avoid root pruning if at all possible.
The injury you inflict upon your plants simply invites a host of root rot problems.
When unavoidable, treat stock in advance with a foliar spray of Aliette® or Fostonic and repeat the application a month later. These chemicals will help prepare the stock to deal with the increased disease threat.

Avoid putting stock under severe moisture stress. This can occur when tube stock is held over to long, has become root bound, and is under less than ideal irrigation conditions.
I often see tube stock being held in the car park or under trees supposedly as a temporary measure. They are still there months later!

NURSERY 'KNOW HOW' :

#12 Biological pest & disease suppression

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Keep hygiene as a priority
Remember to spray your tube stock, especially that bought in, along with the rest of the nursery. It is easily overlooked if you have parked it, temporarily, away from the main production area.
Contamination from Willow or Poplar leaves in Autumn may result in an increased incidence of rust diseases. Contact with the soil or sitting in a puddle may result in root rot attack.

2. Biological
Potting mix type can contribute significantly to the promotion of healthy plants if it will support and foster a diversity of beneficial organisms.
Many bacteria and fungi are antagonistic or even predatory on plant pathogens.
You can boost these with strategic additions of *Trichoderma*, mycorrhizae and bacteria to your mix.
A number of proprietary products exist.
The resultant symbiotic relationships can be immensely useful, very cost effective and, in some cases, still compatible with chemical use.

3. Chemicals
Selective and considered use of chemicals is realistic and need not be expensive or have harmful side effects. Review the options carefully. Focus on the active ingredients rather than brand names. The same active ingredient is often available at the same concentration under different brand names at lower prices.
Develop a plan that involves alternate products for each task. Ring the changes to avoid disease resistance.

Read the labels carefully and follow instructions.
Do not attempt to eradicate disease with protectant formulas. This could result in resistance.
Enquire about compatibility with the beneficials in your growing media.

Anticipate disease problems

Most common are:
Pythtophthora
Pythium
Fusarium
Rhizoctonia
Downy mildew
Powdery mildew
Rusts
and Leaf spots

Prepare an action plan. Research carefully the options. Focus on prevention rather than eradication. Apply sprays in consideration of plant growth rate rather than simply 14 day intervals. You may need to spray more frequently in Summer for example.

Choosing the least toxic chemical formula for a given task will be gentler on you, the environment, the plant, beneficial bacteria and fungi whilst still suppressing disease.

Remember to consider the integration of all the methods of control at your disposal; cultural, biological and chemical.

McHort have unrivalled expertise in the development of practical pest and disease suppression using biologicals. We also supply many excellent products to support your efforts to manage this ever present threat. Please do call use for any further Information or a detailed programme for your growing business.

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