NURSERY 'KNOW HOW' :

#9 Sciarid fly (Fungus gnat)

McHort KNOW HOW
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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 over-head irrigation, when combined with shade and plant nutrient supply, efficiently spreads and promotes the growth of the attractant moss and algae. So, how should we deal with this pest?

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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.

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. They work best on the newly germinated spores less so on established liverwort. Just keep them away from ferns and other valuable plant material propagated from spores.
McHort Vinagreen vinegar herbicide diluted 1:2 in water is effective against liverwort, moss and algae but be sure to avoid contact with valuable green plant material as it is non selective.
Great for under benches though!

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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. 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.

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 up 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. See www.mchort.co.nz
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 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.
Call Donald if you would like to establish a bio-control system at your place.

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