

THE SUN GRO'er

The Sun Gro Tech Specialists

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Sun Gro has 7 main Tech Specialists, 3 in the West and 2 each in the Central and Eastern regions. Their duties include QC work with specific plants, along with providing tech support for specific sections of their region. Tech support includes workwiths, complaint handling, training and custom blends. These are the Tech specialists who will be providing most of the content for the Sun Gro'er Newsletter. Following is some information on each of the Tech Specialists:

Shiv Reddy

Shiv was with Sun Gro during the Warwick days and left for a few years to work in California. He returned to Sun Gro in 2000 and is a technical specialist in the west based in California. Shiv has done a lot of work with the Technigro line and was instrumental in finding our present source for Technigro fertilizers. His first article deals with heavy metals in fertilizers. He can be reached via email shivr@sungro.com and phone (707-726-7738).

Nancy Morgan

Nancy has been with Sun Gro since 1996. She was initially based in Texas, but moved to the Western Region to work in conjunction with the Hubbard and Fillmore plants. Nancy has a background in nutrition and has worked closely with the Hubbard and Fillmore plants on product improvement and QC. Nancy lives in Oregon and can be reached via e-mail (nancym@sungro.com) or phone (503-981-4406).

Mark Thomas

I was born in Pittsburgh, PA. I grew up on the SW coast of Florida. I am married and the father of 3 boys and 1 girl ranging in ages from 14 to 6 years old. My family has been in the greenhouse industry since the late 1800s, starting with my great grandfather and grandfather in Pennsylvania. I graduated from the

University of Arizona with a degree in Plant Pathology. I spent 13 years in Florida in production at various foliage, woody ornamental, tissue culture, tree farm and plug operations before moving into sales for Sun Gro in 1994. In October 2001, I moved into the Central Region Technical Services and now support our sales people in La, Ms, Tx, Ok, Ar and Mexico along with the production plants in Pine Bluff, Ar and Terrell, Tx. Mark lives in Texas and can be reached via e-mail (markt@sungro.com) or phone (281-358-1864).

Rick Vetanovetz

Rick has been with Sun Gro Horticulture since October 2001. Received his M.S. and Ph.D. in Horticulture from The Ohio State University specializing in plant nutrition and soil biochemistry. Rick has been serving the greenhouse and nursery industry through technical services and R&D with various horticultural suppliers since 1987. He can be reached via email (rickv@sungro.com) or phone (937-642-2646).

Ron Walden

Ron joined Sun Gro as DM for the Carolinas, but then took on the Tech Specialist position in the Eastern region when it became available. Ron has been a grower (and owner) in the greenhouse industry and has worked for extension in VA. Prior to

coming on board with Sun Gro, he worked for Aquatrols, thereby making him our wetting agent guru. Ron works closely with the Elizabeth City and McCormick plants on QC. Ron has an article on calibrating fertilizer injectors. Ron lives in Virginia and can be reached via e-mail (ronw@sungro.com) or phone (757-486-4728).

Dan Jacques

Dan joined Sun Gro as a tech specialist in the East in 1997, coming over from the Scotts Company. Dan has also been a grower and has worked in the seed industry (Pan American Seed). His background is in nutrition. Dan works with the Quincy plant on QC. He lives in Massachusetts and can be reached via e-mail (danj@sungro.com) or phone (413-549-2793).

Nicole Bisson

Nicole graduated from the University of Alberta with a B.Sc. Specializing in horticulture and a M.Sc. In plant physiology. She also has several years of experience in a retail/wholesale greenhouse environment. She is a Tech Specialist for the Western Region and will be based out of the Seba Beach and Vilna production plants. She can be reached via email (nicoleb@sungro.com) or phone (780-797-3019 ext. 312). Fax: 780-797-3097

A Few Notes From the North Central

Soluble salts is a measurement used for testing the “fitness” of growing media in the greenhouse. Soluble salts is assessed by measuring the electrical conductivity (EC) of a mix. Watering practices will have a dramatic effect on the levels of soluble salts in a growing medium. Salts originating from fertilizers or water provided to a crop can and will “build up” as the practice of leaching is reduced or eliminated. So a critical point to remember is that when growers reduce leaching for various reasons, especially with large container sizes like hanging baskets, growers will most likely note higher EC levels. Invariably nothing has changed in the mix but the growing practice.

Often the practice of thoroughly wetting out the mix after planting is not conducted which tends to intensify the issue. When thoroughly wetting out the crop all the nutrient charge components are thoroughly and uniformly “activated”. This usually circumvents the problem. For growers who desire low EC levels and do not want to leach, the ideal solution is to consider Sunshine LB2 or other products having reduced nutrient charges. Then growers can have more control over their nutrient inputs and not worry about high EC levels caused by changes in irrigation practices. Speaking about irrigation practices, the encouragement of fun-

gus gnats is always coupled with moisture. In recent years, the use of coconut coir pith, or coir, as a medium component has been promoted as a control measure to retard fungus gnat larvae from proliferating in growing media. A recent article on this very question has been published



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in HortScience (Volume 37(6):919) authored by researchers D. L Olson et. al. at the University of Georgia. Their work has found that the inclusion of coir had no consistent significant effect on the reduction of fungus gnat larval counts in the medium. The point is if growers are looking for tools to battle fungus gnats, including coir in the mix is not the answer. Growers should

begin with excellent greenhouse sanitation practices. Standing water or persistently wet conditions on greenhouse floors should be eliminated as much as possible along with algae that often goes with it.

And speaking about sanitation and fungus... Did anyone note the excellent article in Grower Talks (February 2003, p 70) about carry over of *Thielaviopsis basicola* on reused plug flats? Researchers at NC State “discovered” that growers who reuse plug flats and do not do an adequate job of disinfecting them invite problems. *T. basicola* spores, called chlamydospores, are very resistant to environmental conditions and can persist for quite some time in the environment. This means that spores can readily “carry over” on flats if

not sanitized. And it depends on how they disinfect the flats. Their work found that Zerotel at the 2.5 fl. oz. / gal. or bleach (9 water: 1 bleach solution) worked the best. The longevity of using these solutions are also contingent on the amount of organic matter being washed off the containers and growers should follow label recommendations closely. When growers complain about disease on their crops always ask the question whether proper sanitation practices were carried out. Simple things like re-using pots or flats and how they are sanitized are fair game. Tried and true practices like working on clean and sanitized surfaces are paramount. Growers who finish crops should also inspect plugs, cuttings and the like for evidence of disease.

~Rick Vetanovetz



Notes from Walden's Pond



How to calibrate those fertilizer injectors

So you've just used that brand new conductivity meter to measure the EC of your customer's fertigation solution and it doesn't match the value that corresponds to the ppm N that he thinks he's been applying forever. What to do now? Since you're already sure that the EC meter is properly calibrated, you better check that fertilizer injector! Fortunately, it's not that hard to do.

The easiest way to check the injection rate is by measuring how much solution is pulled into the injector while collecting a measured amount coming out of the injector, then determining the ratio of these volumes. To do this, you'll need a cup that measures in fluid ounces, a 1-gallon jug, a 5-gallon bucket, and a 20-gallon trash barrel. You also need to be able to collect all of the water that comes out of the injector. Not a problem if the injector is portable, but if the injector is in-line, this usually requires a faucet coming out of the water line after the injector and the ability to valve off the rest of the irrigation lines.

Start by accurately determining a 20-gallon mark on the inside of the barrel, using the cup to mark a gallon in the jug, and the jug to mark 5 gallons in the bucket, etc. Next, put the injector's siphon tube into the gallon jug full of water, turn on the water and run the injector to get everything (injector, pipes, hose) full and working. Turn off the system and refill

the jug to the very top. Turn the system on again and run the injector until you've collected exactly 20 gallons of water from the injector in the barrel. Finally, measure the volume of water pulled into the injector. Do this by using the cup to measure how many fluid ounces of water it takes to refill the jug to the top without removing the siphon tube. To improve accuracy in measuring the amount injected, you may need to collect more than 20 gallons from the injector at low injection ratios like 1:300.

The injection rate will be the ounces of water collected (20 gallons x 128 fluid ounces per gal = 2,560 fluid ounces) divided by the fluid ounces injected. If the injection ratio is 1:100 and the injector is working correctly, it should take 25.6 fl. oz. to refill the jug. If the injection ratio is significantly off, run this test again. If it's still off, make the necessary adjustment to the injector and re-run the test. Once the injection rate is correct, re-test the EC of the fertigation solution. If the EC is still not what you expect at that injection ratio for a particular fertilizer and ppm N, the problem may lie with the make up of the fertilizer stock solution.

Save that barrel with the 20-gallon mark and this becomes an easy way to routinely check injectors.

~Ron Walden

Items You Will Need to Calibrate Those Injectors

Fluid ounce measuring cup

1-gallon jug

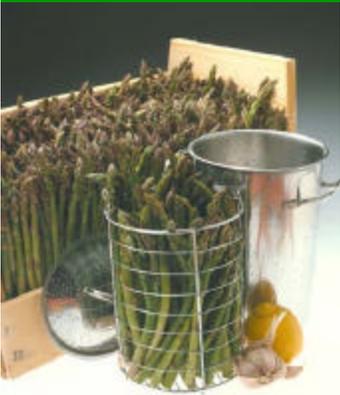
5-gallon bucket

20-gallon trash barrel



Reddy-Set-Go!

You don't have to worry about that lettuce salad if it was fertilized with Technigro, nor about getting exposed to heavy metals from Technigro



Technigro and heavy metal don't rhyme

You may be into heavy metal music, but Technigro is not!

You can't drink that beer and eat barbecued fish on the deck with peace of mind! Because you have heard of lead in beer can, mercury in fish, arsenic on wood decks. As you may know, all these are heavy metals and pose danger to human health at certain concentrations. But you don't have to worry about that lettuce salad if it was fertilized with Technigro, nor about getting exposed to heavy metals from Technigro.

Fertilizers are coming under heavy metal regulations. Washington State started regulating heavy metals in fertilizers about five years ago. Since then Texas, California and recently Oregon have come up with such regulations. More states would follow, because of the fear that they might become dumping ground for fertilizers that are illegal in neighboring states.

The concern for heavy metals started with the use of industrial waste as fertilizers. For example, mining wastes are used to make zinc and iron fertilizers. Zinc and iron are plant nutrients, and recycling of waste is good, but the waste also has other heavy metals such as arsenic and lead as byproducts. When using these fertilizers, growers could get exposed to these heavy metals. Heavy metals

could contaminate ground water or accumulate in crops such as lettuce and get ingested into humans, eventually causing health problems.

Fertilizers are regulated by individual states. All the states have regulations for the intended nutrients in fertilizers, but no regulations existed before for unintended contaminants. The states that started regulating heavy metals in fertilizers approached the acceptable standards in different ways. For example, Washington State limits how much heavy metal comes from using the recommended rate of a fertilizer. Since the application rate determines the limit in this case, a manufacturer can simply lower the recommended rate to meet the standards, of course at the cost of product performance! California limits are based on maximum concentration of a heavy metal in relation to the concentration of a certain nutrient. For example, a fertilizer containing 6% phosphate should not have more than 18 ppm arsenic.

As you know, nutrients intended to be in the bag are listed on the label. Unintended heavy metals are not being listed on the label yet. Currently, there is web site address on the label from where one can get more information on heavy metals in that fertilizer. You could point that to the customers to show that the fertilizer meets heavy metal standards, as an additional selling point.

Using EPA methods, we intend to test Technigro formulas for heavy metals on an ongoing basis as a means of monitoring quality control. These results could be used for those environmentally conscious customers who are interested in using not just the fertilizers passing the regulations, but want to use fertilizers with the lowest heavy metal content. In fact, *The Seattle Times* scored Technigro one of the cleanest fertilizers with regard to heavy metal content.

~Shiv Reddy

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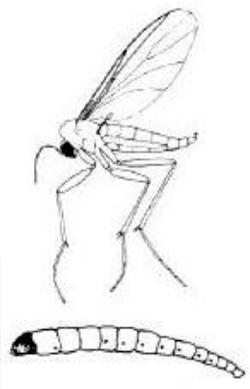


Controlling UFP's (Unidentified Flying Pests) in the GH

Almost all greenhouse growers find themselves battling little black flying insects in their greenhouses at some point in their career.

Small black flying gnats can be shore flies (Ephydriidae family) or fungus gnats (Sciaridae or Mycetophilidae families). The shore flies are commonly found in greenhouses or nurseries where algae is growing on the soil surface or on the floor. They feed on algae and although they are a nuisance, they pose no damage to plants. Their larvae look like maggots and are wedge shaped. The adults look more like the common housefly flies with short bodies and small antennae.

Fungus gnats have long, thin bodies and pose a greater problem to greenhouse crops. They are highly attracted to organic based growing media and when they find a dark,



Fungus Gnat and its larva

moist environment, they set up housekeeping. Potting soils typically have vent holes in the plastic bags, which allows the manufacturer to seal the bags without trapping additional air. These same vent holes allow fungus gnats to enter the bags and lay eggs. While the adults are primarily a nuisance, the larvae can feed on plant roots as well as fungus and organic matter. The larvae are clear and worm-like with a black head. No potting mixes have been found to be immune from fungus gnats.

The greenhouse grower can prevent infestation by reducing excess moisture and algae in their greenhouse.

- Some operations use hydrated lime on greenhouse floors to reduce algae growth and make the greenhouse a less attractive home for these pests.
- Yellow sticky traps help to trap and monitor pest populations.
- Keep the top of the pot as dry as possible; water from the bottom. This prevents the adults from laying eggs on the surface. The adult's life span is approximately 7 days.
- If the you notice little, gray-brown mites on the surface of the mix, rejoice. These are predatory mites who eat fungus gnats; they will die off when they run out of food.

- There are many products available that have been used to effectively control fungus gnats and shore flies. These include insect growth regulators and beneficial insects that help control larvae, as well as conventional insecticides that kill adults on contact.

Biological controls include:

- ✓ insect-attacking nematodes (mostly *Steinernema feltiae*)
- ✓ predatory mites in the genus *Hypoaspis*
- ✓ *Bacillus thuringiensis* H-14 (Gnatrol)
- ✓ Diatomaceous Earth (incorporated or applied to surface of media)

Insect Growth Regulators (IGR's) which affect a certain stage of the pest and prohibit it from reaching adulthood and thus the reproductive stage:

- ✓ Azatin (Azadirachtin)
- ✓ Citation (Cyromazine)
- ✓ Precision (Fenoxycarb)
- ✓ Enstar II (Kinoprene)
- ✓ Adept (Diflubenzuron)

Conventional insecticides include:

- ✓ DuraGuard (chlorpyrifos)
- ✓ KnoxOut GH (diazinon)

~Michelle Miller and
Nancy Morgan

SUN GROTM

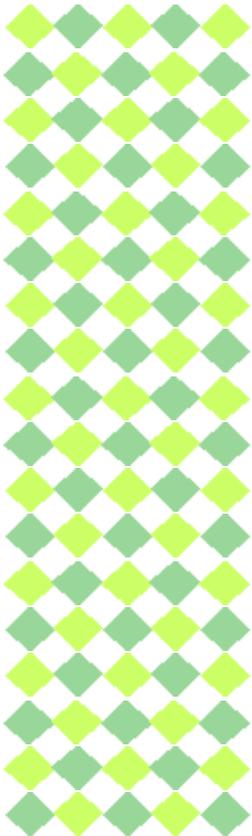
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We're on the web!
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Sun Gro Horticulture is dedicated to delivering world-class results by focusing on customer, employee and investor satisfaction



Editor's Notes

Welcome to the revival of the Sun Gro'er Newsletter. The focus of this newsletter will be expanded somewhat from the previous newsletter to include our distributors and, eventually, the growers. It will be a quarterly newsletter with articles timed to fit the growing season. In the first edition, we will be introducing the Tech Specialists who will be writing articles for this newsletter and will also have a few articles that can be of help to our customers.

The newsletter will also include information from at

least one production or CRC location each quarter. I will be asking production managers or CRC managers for some information about what is going on related to product improvement (product being peat or mixes that we sell or the service associated with those). The goal is to have this be informative and helpful to the distributors and growers as well as our Sun Gro employees.

I would like input from the sales group as to which of their distributors we should be sending this newsletter to in

the future and how many copies should go to the distributor. Please e-mail your list, preferably in Excel format, to me (danj@sungro.com).

We hope you will enjoy the newsletter and, as always, your comments are always welcome. We would especially like to hear what you think of the content, timeliness and layout of the letter. We will eventually be offering the newsletter on the Sun Gro web site in addition to mailing to sales and distributors.

-Dan Jacques