

Vertical Growing Technology

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Information Update

The TPIE show in Ft. Lauderdale was well worth attending. There were many suppliers of products there and the first hand information was very helpful. Some of that information is included in this bulletin.

Problem Pests, Pesticides & Fungicides

Spider mites are still the biggest insect problem with strawberries.

Recently we tried **Neem Oil**. We got results but didn't know it at first. The plants seemed to get worse looking even though the mite level went down.

With some reading and discussions with the manufacturers of a product called **Triact** (which contains **Neem oil**) we found that **Neem oil is phytotoxic to strawberries**.

It looked like spider mite damage but upon turning the leaf over and inspecting it under a microscope we found the mite population down but the damage to the leaf had increased.

Neem oil is very safe on many plant varieties and has a low toxicity to bees and predators. It does have a strange smell but it goes away fairly soon.

Another problem we had with spider mites was with the application

of *Cinnamite* with the electrostatic sprayer. It now appears that the information on *Cinnamite* says that the contact time has to be 1/2 hour or more. This means that it has to be wet for at least 1/2 hour. This is impossible with ESS and many other sprayers.

Application at night may be necessary or early in the morning. Also the rate for greenhouse crops may have to be increased over the recommended 21 ounces per 100 gallons.

We will try it with our tank sprayer and let you know the results. (*If you use BotaniGard or other botanical sprays you might check the contact time recommended by the manufacturer if you are not getting the results you expected*).

Vendex is another old chemical that is apparently effective on mites on strawberries and is relatively safe for use around predators and bees.

Two applications may be necessary. This is a lot less costly than *Cinnamite*.

Abamectin (*Agrimek* or *Avid*) is still the best choice for mites on most plants. **Agrimek** is approved for strawberries and many other vegetable crops.

Avid is the ornamental label for the same product.

For leaf spot, *anthracnose* and *Botrytis*, *Royal* (EPA reg. No. 264-453) is approved for strawberries and many other vegetable crops. It can be used right up to the day of harvest. It can burn the small fruit if applied during the heat of the day so take care when applying this fungicide.

Elevate still appears to be a safe and effective control for *Botrytis* and perhaps several other disease as well.

It is relatively expensive but very effective. Alternate with *Royal* and *Captec*.

As a word of caution, *Captec* and many other wettable powder fungicides leave a residue on the leaves and fruits. This is unsightly and reduces the photosynthesis if allowed to build up too much on the leaves.

Rain washes these materials off the leaves and fruits outside. In a greenhouse they continue to build up.

You can safely use **ZertoTol** or *Hydrogen Dioxide* (which is a mixture of Peroxyacetic Acid and Hydrogen Peroxide) to clean the plants while helping to control several diseases.

This is a great product to spray just before the day of harvest. The label for vegetables is "*Oxidate*" which is the same product.

Cold Weather Hurts!

We have been through more cold weather this year than in the past three years combined. **Our outdoor vertical growing system with frost protection has worked well down to 21 degrees.** However we have found that more water is needed than what we could put on with the orange and red misters at the spacing we have set up.

It is now apparent that covering the plants is the right thing to do if you have temperatures below freezing. Production and color is better without plastic but with the long period of cold weather that we have had this year, covering and heating would have paid off.

Out door systems should be a part of your long range plans to supplement your production at a lower investment cost. Crop covers can be used down to the mid twenties with good protection of strawberries, lettuce, spinach, greens and most herbs.

Alternative Crops

We are extremely pleased with the production of lettuce in the vertical towers. Disease control has been easy and quality is excellent.

The rapid growth is pretty astounding even in the coldest weather. **Our lettuce has survived 22 degrees outside** in these insulated pots with just a special crop cover. There was no damage without the cover, down to freezing.

Trials on hanging tomatoes have been delayed due to the weather. Our new greenhouse is not quite ready (due to the

weather) but the outdoor trails are still on and production is beginning.

We are trying a number of full size tomatoes as well as some cherry types.

Herbs seem to grow with ease in this system. Most herbs are bringing **\$1.00 to \$1.75 per ounce** in the stores these days.

We will be introducing a new way to grow hydroponic herbs and organic herbs in pots for resale soon. Herbs in 4-6" pots bring **\$1.99 to \$2.49** retail. They can be grown to saleable size in 3-5 weeks.

Organic Growing

Our organic line of products and supplements is now ready. This is still more difficult than hydroponic growing. There is a paper by Dr. Mary Peet from NCSU presented in the 1999 ASP proceedings that will verify this statement. We now have copies of these proceedings on hand for \$15.95 each plus S&H. There is an abundance of other important information on greenhouses and greenhouse crops in these proceedings.

We still prefer a dry slow release formula mixed with coconut fiber and then add liquids as needed in the natural form or chelated with *lignosulfonates* or *glucoheptonates*.

Over Summering Strawberries in Hot Climates

Everyone that sees our "over summered" strawberries is wondering how we are doing.

Actually, it is too early to tell. The cold, hard winter and the open-air greenhouse have not given us the results we had hoped for. However, when it does warm up to our normal levels we should see improvement.

The plants are strong but we do have some diseases. Care must be taken to control diseases before they get out of hand.

We have to keep in mind that strawberries are perennials and have to go dormant sooner or later and some obviously need the cold treatment.

The early production and quality was very encouraging. Using a combination of **Roval** and **ZeroTol** during the summer would have made a big difference in the disease factor.

We do know that we were a month ahead of everyone else and we do know that you can carry Sweet Charlie over the summer and over the winter in the dormant stage.

All the plants we carried over are, or were initially on a re-circulating system. Therefore the disease factors were magnified. We also stressed one of the areas (10,000 plants) too much and lost too many of the plants or set them back too far.

The reasons for doing these tests are quite simple. We need earlier production. A field grower, especially one that sells through wholesalers, could not consider what we are doing with the vertical towers and insulated pots. Not at the present anyway and not in Florida. However, "U-Pick" operations can afford to do things that wholesale operations cannot afford to do.

The planting of bare root plants in the **Verti-Gro** containers are not as fast as we would like it to be. There are too many ways for a grower,

especially one that has never grown strawberries, to make mistakes when planting and storing bare root plants.

Plug plants would be a better way to go but plug plants so far have not been available until about October 15-21. We would have tried some but we were already committed to too many bare root plants.

The UF is apparently looking to get a grant to grow plugs in Florida and cold treat them locally. We have already done this on a small scale in Georgia and it worked. We will attempt to do it again this fall.

Day neutral plants are now available in lots of 1,000 and 100 from **Lassen Canyon Nursery in Redding CA.**

Call Robin at 530-941-0310. They should have *Pacific, Aromas, Tristar* and *Quinalt*. Day neutrals will produce less per plant but longer into the summer than *Sweet Charlie*.

What's Ahead?

We will have a one-day commercial workshop on Saturday April 8th, 2000.

For more information and topics please call or refer to our web site vertigro.com. We will be posting this information soon.

Our open house at the Ft. Lauderdale North Fork elementary School is set for April 16th. The grant program initiated and administered by the **Earth Rangers** includes a greenhouse and vertical growing system to train 4th and 5th graders to grow and sell hydroponic vegetables and other crops.

We will be at the **Daytona**

Home and Garden show on March 16th with a full display of systems and plants as well as a greenhouse.

Our new outdoor vertical garden, which has 30 pots, electronic timer, pump, ground cover, piping and growing media retails for **\$159.95** and is selling like hot cakes. This is a great way to garden and learn a new business.