



Berry/Vegetable Times

October 2005



 UNIVERSITY OF
FLORIDA
IFAS EXTENSION



2005 Calendar of Events

Oct. 11 and Nov. 8 Pesticide License Testing. Hillsborough County Extension Office, Seffner. 9 am. For more information call Dave Palmer, 813-744-5519, ext 103.

Nov. 16 Frost/Freeze Protection Workshop for Strawberry, Blueberry, and Ornamental Plant Nursery Operations. Hillsborough County Extension Office, Seffner, 9-1:30; lunch will be provided. For more information call Alicia at 813-744-5519, ext. 134.

December 8 Cucurbit Production Workshop, GCREC, Balm. Admission is free. Time: 1:30 pm to 4:30 pm. For more information contact Alicia at 813-744-5519, ext. 134 or Phyllis at 941-722-4524, ext. 229.

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From your agent... The Weather Outlook

The weather gurus at the Southeast Climate Consortium are saying that this winter is in a neutral phase. This means there are no moderating influences from El Nino or La Nina to help block freezing arctic blasts so the "front door" is open for massive arctic fronts to come down and cause a major freeze. Historically it is neutral years when devastating freezes have occurred.

Another weather cycle apparently has started. The 30 year dry cycle, which started in 1965, apparently ended around 1995 and now we are going into what they say will be wetter conditions for the next few decades. This is due to the Atlantic Multidecadal Oscillation or AMO. The AMO lasts from 20 to 40 years and affects rainfall throughout the US. Central Florida is greatly impacted since we receive 60% of our annual rainfall during the summer and this is when the AMO has the greatest effect. The AMO is a change in temperature in the North Atlantic Ocean and it only

takes one degree Fahrenheit temperature difference to have long lasting effects on rainfall. The last time there was a warm phase of the AMO which lasted from 1925-1965 there was plenty of rainfall in peninsular Florida even though some areas of the US received less. I know it is hard to believe that right now we are in a wet time since we have had several very dry hot weeks of weather. However, by the end of August, many areas in central Florida have already received more rain than their average yearly total.

So the water districts' problem may not be one of drought but of what to do with all the extra rainfall.

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(Continued on page 2)

Early Season Disease Control

Natalia Peres and Jim Mertely

Root necrosis and Anthracnose fruit rot:

It is well-known that disease-free transplants are one of the best means to minimize disease problems during the season. However, recognizing potential disease problems in transplants is not always easy. Transplants colonized by *Colletotrichum acutatum* often appear healthy, although petiole lesions can be occasionally found (Fig.1). In our last article, we discussed our research findings on pre-plant dip treatments to control root necrosis caused by *C. acutatum*. This same fungus also causes anthracnose fruit rot. Normally, few fruit are affected by this disease when the first crop is harvested in December and January. This suggests that disease management early in the season can be less rigorous than those later on. Weekly applications of captan from November through January do not always improve early season control of anthracnose or botrytis fruit rot. However, these applications help to suppress pathogen colonization and often increase yields. Our present recommendation is to apply a broad-spectrum protectant fungicide such as Captan at the lower label rate early in the season and to increase the rate in late January or early February when disease pressure is greater. Applications should start as soon as possible after overhead irrigation has been turned off. Cultivars vary in their resistance to anthracnose fruit rot and this should be considered when deciding on a fungicide program. 'Sweet Charlie' and 'Carmine' are highly resistant and regular applications of Captan are usually sufficient for good anthracnose control. 'Camarosa' and 'Treasure' are highly susceptible and Captan applications should be combined with Abound, Cabrio, or Switch later in the season. 'Festival' is intermediate in susceptibility to anthracnose.

Powdery mildew:

Powdery mildew (*Sphaerotheca macularis*) is a disease problem that often occurs early in the season (Fig.2). Cultivars also differ widely in their resistance to powdery mildew. 'Festival', 'Camarosa', and 'Winter Dawn' are fairly susceptible to the disease. Fields with susceptible cultivars should be surveyed regularly during the early season. To control powdery mildew on susceptible cultivars, fungicides should be applied at the first sign of disease. This is especially important when using protectant fungicides such as elemental sulfur. Systemic fungicides such as Nova, Procure, and Topsin can control powdery mildew if the pathogen population has not become resistant to them. Strobilurin fungicides such as Abound, Cabrio, and Pristine are also effective in suppressing the disease, but caution should be taken not to exceed four to five applications per season. Whenever possible, it is important to obtain the information on their fungicide spray programs from the nursery. Nursery application of systemic fungicides that are also labeled for field use should be considered on the total limit of applications per crop season.

Angular leaf spot:

Disease-free transplants are also considered the best way to avoid angular leaf spot caused by *Xanthomonas fragariae* (Fig.3). The development of the disease is favored by warm days and cold nights usually observed early in the season. Although copper fungicides can suppress this disease, low rates should be used to prevent phytotoxicity. Rain and overhead irrigation are important means for dispersal of this pathogen. Thus, minimizing the use of overhead sprinklers during plant establishment and for freeze protection will also reduce the spread of the disease.

Colletotrichum crown rot:

Crown rot diseases also typically appear after plant establishment early in the season. In

Florida, *Colletotrichum gloeosporioides* is the most common cause of crown rot disease (Fig.4). Our most recent experiments suggest that regular applications of Captan after crop establishment should help to reduce losses to *Colletotrichum* crown rot. In fields with a history of the disease, applications of Topsin M after rain events in the fall may also be helpful. For more information, consult our article on *Colletotrichum* crown rot in the May issue of the Berry Times.



Fig.3. Angular leaf spot symptoms on strawberry leaves



Fig.1. Sporulation of *Colletotrichum acutatum* on petioles



Fig.4. *Colletotrichum* crown rot (*C. gloeosporioides*) symptoms



Fig.2. Powdery mildew symptoms on strawberry leaves

The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products names and does not signify that they are approved to the exclusion of others of suitable composition. Use pesticides safely. Read and follow directions on the manufacturer's label.

Methyl Bromide and Field Evaluation of Alternatives Fall 2005

J.W. Noling, UF/IFAS Citrus REC, J.P. Gilreath, UF/IFAS Gulf Coast REC and Alicia Whidden, Hillsborough Co. Extension Service

As we have reported in previous newsletters, and as was presented at the recent AgriTech 2005 Seminar in August, methyl bromide availability continues to be one of the hot topics of discussion within industry. Is it any wonder since it was technically phased out of production and use January 1, 2005 and is now being made available to Florida strawberry growers only through award of a Critical Use Exemption (CUE). The CUE is a temporary safety valve to make methyl bromide available to users who have no other economically viable or technically available alternative to provide broad spectrum soilborne pest and disease control. The CUE is an annual award, designed by international agency to be made more difficult to annually acquire. This international agency, United Nations Montreal Protocol, also seeks to reduce the approved use rate per acre every year, forcing growers to annually produce with less. The total amount of methyl bromide allowed for strawberry use during the year is formula driven, relying on use of remaining commercial stocks of methyl bromide as part of the award, coupled with those from other newly manufactured supplies. So far, the industry has not experienced shortage. This season it seems pretty clear, that as long as someone is willing to pay \$3 or more per pound, methyl bromide availability is not going to be a concern to strawberry growers for fall 2005. What will it be next year? How long before demands of reduced use cannot be completely avoided through political maneuvering, and shortages finally hit the industry? Given current sentiments in Washington, it is hard to conceive of a federal rescue of methyl bromide for continued, even judicious use. Unquestionably, there is uncertainty about the future of Methyl

bromide, and since we cannot predict the future, we believe growers should all be developing a 'future plan' which explores and minimizes dependence on methyl bromide as the key component of their on-farm pest management program.

If you have followed the results of IFAS research efforts to identify methyl bromide alternatives, you would recognize that this is not going to be an easy, painless substitution. It will involve new fumigants such as Telone, Chloropicrin, Vapam, and Kpam. It will involve separate applications of different herbicides, applied before bedding and maybe, depending on the problem, also during the bedding operation. It will be a new learning experience with new colored cylinders, new odors, and even new production practices for both broadcast and in-bed applied herbicides and nematicides to name but a few. We have never said it would be easy. What we have said is that it will require patient and willingness on the part of growers to successfully and effectively implement. It will require planning horizons which account for unexpected delays, including breakdowns, hurricanes and no-name storms.

There are other reasons to trial methyl alternatives. For example, there is an obligation, on the part of the strawberry industry, to demonstrate to the international agencies that ongoing efforts to trial the alternatives is in effect. An industry goal is to identify and document their use, including their shortcomings and pest and yield consequences if any. So, as important as it is to your production plans, future CUE's are dependent on some form of documentation regarding the extent to which Florida Strawberry Growers are not only trialing, **but** implementing alternatives. Everything seems to be linked together, one aspect influencing the other and vice versa. And as far as we see it, we have finally entered the time which we call the 'plan able' future.

WHAT IS IFAS DOING THIS FALL:

Before proceeding, we would first like to acknowledge our previous cooperators. We surely would not know as much as we do if it were not for a few visionary growers, who through their generosity, provided onsite access, equipment, labor, and other resources to conduct replicated on-farm demonstration / experimentation research. We would like to thank those who have repeatedly allowed us to advance the science on their farms. We are also hopeful for new cooperators who will allow us to expand into new areas of pest management research, including influences of the soil environment and production practice on nematode population level and yield consequence. This year our **FALL 2005 RESEARCH PLANS** are to characterize the importance of :

- 1) The row middles as zones for survivorship of sting nematode soil fumigant treatment and as zones of origin for recolonization of the strawberry bed.
- 2) The use of Vapam or Kpam as a post harvest crop destruction tactic to incrementally reduce nematode pest population pressures at the conclusion of the spring cropping season.
- 3) The use of Telone C35 (26 gal/a) and Telone InLine (26 gal/a) applied in-bed as an alternative to Methyl Bromide / Chloropicrin for nematode and disease control.
- 4) The use of broadcast applied Devrinol (4 lb ai./a) followed by an over the top bed spray of Goal (2 qts/a) for strawberry weed control.
- 5) To evaluate the use of chisel plowing as a means of destroying the soil compaction layer prior to soil fumigation so as to

improve fumigant diffusion in soil and nematode control.

- 6) To continue to evaluate the tolerance of different strawberry cultivars to damage caused by sting nematode in four grower field demonstration trials.
- 7) To study the efficacy of different formulations of methyl bromide applied alone and or in various concentrations with Chloropicrin for nematode, weed, and disease control at the FSGA research farm.
- 8) To continue to evaluate the use of high barrier and or virtually impermeable plastic mulch films in conjunction with reduced rates of methyl bromide and chloropicrin for nematode and disease control and strawberry crop yields.

We still believe it is imperative that Florida strawberry growers actively continue field testing of these alternatives, and to collaborate, to the extent possible, with University of Florida scientists involving monitoring and documentation of treatment differences within field demonstration trials.

WHAT WOULD WE TRIAL IF WE WERE GROWERS:

- 1) For strawberry growers with nematode problems, small-scale field evaluation of Telone C-35 or Telone InLine, applied in-row at application rates of 26 to 35 gallons per treated acre.
- 2) For strawberry growers without nematode problems, small-scale field evaluation of chloropicrin alone, applied in-row at application rates of 300 lb per treated acre, should be considered for testing.
- 3) New formulations of methyl bromide/ chloropicrin such as 50 / 50, to determine

the extent to which actual use of methyl bromide can be reduced without compromising yield or pest control.

- 4) For these small scale trials, use of separately applied herbicide such as Devrinol (4 lb ai./ acre) and or Goal (1-2 qt/a) should also be evaluated in conjunction with the alternative fumigants for weed control. For these trials, some modification of fumigant injection equipment may be required to be able to dispense either Telone C35 or Chloropicrin from 200 lb (15 gallon) pressurized cylinders. Two weeks prior to Telone or Chloropicrin application, growers should consider deep chisel plowing of these fields (or portions thereof) to destroy any soil compaction or traffic layer, so as to improve downward diffusion and overall effectiveness of the alternative fumigants in soil. And finally,
- 5) Consider the field installation of a roll or two of a high barrier, virtually impermeable (VIF) plastic mulch to reduce field application rates and soil emissions of methyl bromide or other fumigants such as 1,3-D (Telone) and Chloropicrin. Previous research has repeatedly demonstrated that methyl bromide use rate reductions upwards of 50% is possible without loss of pest control or crop yield. Rate reductions of 20, 25, or even 33% are suggested for small scale treatment comparisons with a standard dose of methyl bromide using a standard, low density polyethylene mulch.

If a grower is interested in conducting a field demonstration trial comparing an alternative to methyl bromide, or simply requires more information regarding the testing process or a more complete enumeration and description of other possible alternatives please do not hesitate to contact either Alicia

Whidden (813 744-5519; ajwhidden@ifas.ufl.edu) or Dr. Joe Noling (863- 956-1151 ext 1262); jwn@crec.ifas.ufl.edu for more information.

Possible New Strawberry Pest

Jim Price, Gulf Coast REC

The Florida Department of Agriculture and Consumer Services Division of Plant Industry announced that the twobanded Japanese weevil (*Pseudocneorhinus bifasciatus* Roelofs) has been discovered in Florida for the first time. It was collected in a soybean field in the panhandle town of Chipley (Washington County) and is a known pest of woody ornamentals in the northern USA. It is also known to feed on strawberries.



Adults of this insect feed on leaves and the larvae feed on roots. Florida does not have any current problems in strawberries with daunting, root-feeding weevils as do many other states. We do not know how this insect would behave should it become established in Florida's strawberry production areas, but it is not considered an important pest of strawberries where it presently thrives.

Members of the strawberry industry should not be too concerned about this insect presently. We must remain vigilant though to detect any affinity to our strawberries early.

Photographs and additional information can be found at the FDACS Website <http://www.doacs.state.fl.us/pi/enpp/ento/japaneseweevil.html>.

The Potential of Particle Film Technology for Improving Crop Production¹

Craig Chandler, GCREC

Current particle film technology is based on kaolin, a white, non-swelling clay that easily disperses in water and is chemically inert. It is possible to produce kaolin particles with specific sizes, shapes, and light reflective properties, making them useful constituents in paper, paint, cosmetics, and plastics. And recent advances in kaolin processing, formulating, and plant surface deposition properties have opened new opportunities for its use in agriculture.

The characteristics that make a particle film effective include the following: spreads and creates a uniform film; does not interfere with gas exchange from the leaf; transmits photosynthetically active light, but excludes ultraviolet (UV) and infrared radiation to some degree; alters insect/pathogen behavior on the plant; and can be removed from harvested commodities. Currently, a commercial particle film material, Surround[®] crop protectant, is being used on about 90% of the Pacific Northwest pear acreage for the early season control of psylla (the most important insect pest of pear in the U.S.) and on approximately 20% of the apple acreage in Washington State to reduce sunburn on the fruit.

Plant tissues coated with particle films are altered visually and tactilely to insects. Particle films also could alter the taste or smell of the host plant. Laboratory experiments with various insects have revealed that the primary mechanisms of action are repellence or deterrence of adults from treated foliage.

Particle film technology has the potential to suppress some bacterial and fungal diseases, presumably by physically interfering with the infection process or by preventing the adherence of inoculum to the plant surface, but the environmental conditions and treatment timing necessary for this to occur has yet to be

worked out in most cases.

Many horticultural characteristics, including yield, have been improved by the application of reflective kaolin particle film materials. For example, in a California study, the application of 3% Surround[®] to citrus reduced heat stress and resulted in higher yield in two out of three years. However, the interactions between environment, plant species, and time of application need to be determined to assure that the desired horticultural response will occur and be of economic value.

In preliminary studies at GCREC-Dover during the 2003-04 and 2004-05 seasons, applications of Surround[®] to strawberry plants immediately after establishment resulted in increased early yield. This season at GCREC, 'Winter Dawn' plants planted in late September will be treated with Surround[®] to reduce heat stress, and their early yields will be compared to the yields of untreated control plants.

¹This article is based on a technical paper in *Horticultural Reviews, Volume 31*, written by two USDA scientists, soil scientist Michael Glenn and entomologist Gary Puterka.

Chemically Speaking Pesticide Regulations and Actions

On July 15, the Florida Department of Agriculture and Consumer Services (FDACS) conditionally registered the insecticide dinotefuran (Venom[®] 20SG) for control of whiteflies, leafminers, thrips, and other insects in fruiting vegetables, cucurbits, head and stem brassica, grape, potato, and cotton. The EPA registration number for the Valent U.S.A. Corporation product is 33657-17- 59639. (FDACS PREC Agenda, 8/4/05).

The First Strawberry Season at the New GCREC

Christine Cooley, GCREC

The strawberry fields at the new Gulf Coast REC have been prepped and are ready for planting. The following companies are to be thanked for their generous contributions to the center which enables the faculty and staff to continue their research. JayMar Farms for the use of equipment and labor; James Irrigation donated the drip tape for the irrigation; ProSource worked with their supplier, Pliant Corporation, to provide the plastic mulch; and Chemical Dynamics for the soil fertility management services. Thanks also to the entire strawberry industry in Florida

which continues to use UF cultivars. This year it is expected that the UF cultivar 'Festival' will be planted on over 50% of the West Central Florida acreage. At GCREC, the trials will focus on a variety of cultivars including the newest UF release, 'Winter Dawn'. The staff and faculty at GCREC are looking forward to starting the season at the new location.

Current employment opportunity at Gulf Coast REC

Agricultural Assistant (OPS)

The UF Gulf Coast Research & Education Center, located in Wimauma (just south of the Brandon/Riverview area), is looking for a part time Agriculture Assistant to work 3 days/week. Candidates for this job must be able to work independently, drive a tractor, use a respirator, and be able to obtain a Pesticide Applicator License upon employment.

Responsibilities will include the application of fungicides for research trials, spray equipment maintenance, planting and maintaining greenhouse plants (irrigate, fertilize, weed, and apply pesticides as needed), scouting for insects, and assisting with the planting, harvesting & grading of strawberries.

Contact Teresa Seijo at (813) 634-0000 Ext. 3137 or tese@ifas.ufl.edu.

The University of Florida is an Equal Opportunity Employer. The selection process will be conducted in accord with the provisions of Florida's "Government in the Sunshine" and Public Records laws. Search Committee meetings and interviews will be open to the public, and all applications, resumes, and other documents related to the search will be available for public inspection.

