UF UNIVERSITY of FLORIDA | IFAS EXTENSION

Berry/Vegetable Times

September 2009

Calendar of Events

Sept. 15 & Oct. 13, 2009 Pesticide License Testing. Hillsborough County Extension Office, Seffner. 9 am. For more information call Mary Beth Henry at 813-744-5519 ext. 103.

FLORIDA AG EXPO

October 28, 2009

Free Registration at www.floridaagexpo.com

Sessions on
Vegetables, Strawberries
Blueberries, Blackberries
and Peaches
Sustainable Water Use Practices
Methyl Bromide Updates
Field Tours

A University of Florida/IFAS and Florida Cooperative Extension Service Newsletter
Hillsborough County, 5339 CR 579
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James F. Price, Co-Editor

From Your Agent

Renewing Your Pesticide License With FDACS

Growers who have had to renew their Private Applicator Restricted Pesticide License recently have found that they had a very long wait to receive their new license. After talking with the FDACS Bureau of Compliance Monitoring which handles your license renewals, I found that due to budget cuts their department has taken from the state that they are short staffed and things are taking longer to get done. First your renewal goes to a finance department that processes your payment and that is taking at least a week longer and then it goes to the person that checks your paperwork and issues the new license and they tell me they are taking about a week longer than in the past. With all the delays in processing you could find your operation without a

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New Spotted Wing Drosophila to Attack Florida Strawberries

James F. Price and Curtis Nagle

A new pest has arrived in Hillsborough Co. that could affect production of strawberry, blueberry, raspberry and other thin, soft-skinned fruit. In August, 2009, the spotted wing drosophila (SWD) (*Drosophila suzukii* (Matsumura), Diptera:Drosophilidae) was discovered in the northeast corner of the county after having been known about 1 year in California and for less time in Washington.

This fly, originating in the Orient, appears very much like the common drosophila flies that accumulate on over-ripe bananas, flats of strawberries left without refrigeration, old fallen citrus, and other fruit beginning to spoil. In fact, both are small, have prominent red eyes and, indeed, are closely related. Wing tips of SWD males have a dark spot that is lacking in our common drosophila (Fig. 1).

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license during a critical time in your production season.

To try to prevent a delay in receiving your license renewal, here are some things I would advise you to do. When you receive your license renewal in the mail, which typically comes 6-8 weeks before your license will expire, have your paperwork ready and send it in right away. The longer you wait the greater the chance you will not get your renewal back before the expiration date. Know your renewal date and be sure you have the continuing education units (CEUs) you need for renewal before you get your renewal notice. For a Private Applicator license you need 4 Private Applicator CEUs and 4 CORE CEUs for every 4 year renewal cycle. Do not wait until the renewal notice comes in to try to find all your credits. Call me early and we can start working on the credits so you can have them by the time you receive your renewal notice. Fill out your renewal paperwork and don't forget to include the check for the renewal fee. Be sure on your CEU paperwork that you have filled in the top part of the paperwork with your information and be sure to sign the CEU form. Also be sure you mail in the correct number of CEUs for each category. You can always have more but you must have at least 4 for each category. If you have any questions give me a call.

Here's hoping we have good weather for the start of the season,

Alicia Whidden
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Female SWD possess serrations on their egg laying organ that can cut soft surfaces of sound fruit to lay eggs inside. Common drosophilid flies are without that modified

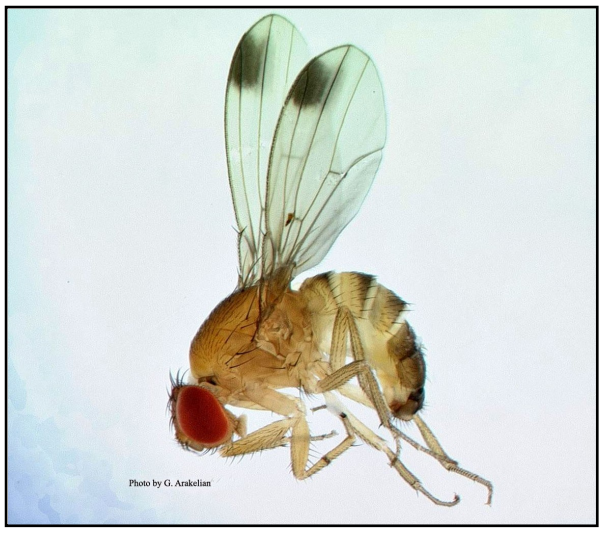

Fig. 1. Male spotted wing drosophila. Photo courtesy of G. Arakelian, Los Angeles County Agricultural Commissioner/Weights & Measures Department.

ovipositor. SWD eggs that hatch inside fruit become white maggots that can soften and ruin fruit in the field or can accompany harvested fruit undiscovered until the fruit are in consumers' hands. There presently are no restrictions to be placed on fruit from infested farms.

This group of small flies often is called the pomace flies, vinegar flies, or the fruit flies, but use of "fruit flies" in this case is confusing since that common name applies to larger flies, the Tephritidae, often problematic and reported in the news media. Tephritids include banded winged flies of concern such as Mediterranean fruit fly, Caribbean fruit fly, Oriental fruit fly, Mexican fruit fly, and others. Drosophilid flies are not closely related to tephritid flies and management of the two groups can be vastly different. For instance, rare outbreaks of Mediterranean fruit fly in Florida are managed in part with mass releases of sterilized male Mediterranean fruit flies. This technique has not been developed for drosophilids and is impractical to consider in most cases.

The SWD is expected to survive well in Florida's climate and, given the swift

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colonization of California, strawberry growers should expect to encounter this fly in winter 2010 and beyond. The degree of interference to production is clearly unknown. However, management plans are surfacing. Below are tactics that can be applied as conditions warrant. Presently there are no action thresholds established or even farm-level scouting protocols established. Presence of SWD on a farm could be ascertained by sweep-netting and observing *Drosophila* spp. attracted to strategically placed bait containers of rotting fruit or of bait prepared from aged bananas mixed with a package of yeast activated by warm water.

Management practices immediately available in Florida for SWD are those used to manage our common drosophilids. Additional techniques of adapting tephritid fruit fly baits with toxicants are being considered and developed for strawberries, but some problems exist in transferring the procedure to the SWD/strawberry system.

The most important progress in managing this new pest will be achieved by implementing cultural practices that deny SWD its breeding sites and kill immature SWD inside infested fruit. This can be achieved in a strawberry field by removing marketable berries quickly, before they are infested, and removing and properly disposing unmarketable fruit and the immature insects they may harbor.

Strawberry fruit disposal should go beyond the common practice of dropping unsalable fruit into the row middle. Any fruit not to be sold should be collected and buried or collected, covered, and sent to municipal disposal sites.

Additionally, applications of appropriate insecticides should be made as SWD appear. Insecticides presently approved for *Drosophila* spp. fly control include malathion, diazinon, and pyrethrum based products (Table 1/Page 4) targeted to adults. There are no insecticides available for maggot control inside fruit. It is unknown how long residues of malathion or diazinon could be effective to kill SWD flies, but the effective period of pyrethrum is very short. Consequently, repeated applications at close intervals may be required under heavy pressure, for populations of mixed life stages, or when flies move from outside sources into fruiting fields. When these conditions do not exist, applications perhaps could be held to one lifecycle or longer, probably 10 days to 2 weeks or longer during much of Florida's fruit production period.

A component of tephritid management often includes large droplet applications of protein-based bait such as Nulure mixed with an insecticide or GF-120 bait manufactured with spinosad insecticide. It is uncertain if such tools can be effective for SWD under any circumstances. However, it is known that problems maintaining adequate moisture level will exist in the bait residues used in a SWD/ strawberry system. And it may be problematic to deliver sufficient quantities of effective bait and toxicant mixture in an environment of heavy feeding pressure by common drosophilid flies.

Production by vigilant and responsive strawberry growers in Florida probably will not be reduced by this new pest, so long as the present management tools remain effective and available and growers cooperate to manage SWD throughout the area. New management measures must be developed, though, to assure long-term control and to reduce the impacts that presently available insecticides can have on *Orius* spp., *Phytoseiulus persimilis*, and other naturally occurring or applied beneficials useful in Florida strawberry production.

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Table 1. Insecticides available in Florida for management of *Drosophila* spp. flies on strawberries.

Active Ingredient	Common Name	REI	PHI	Mode of Action Code
Malathion	Malathion	12 hours	3 days	1B
Diazinon	Diazinon	24 hours	5 days	1B
Pyrethrum	Pyganic	12 hours	0 days	3
Pyrethrum with Piperonyl butoxide	Pyrenone	12 hours	0 days	3

The New Kid on the Breeding Block

Vance M. Whitaker

A couple of weeks ago at the Agritech meeting, Dr. Craig Chandler announced that he has been experimenting with cloning technology. Instead of hiring a new breeder, he instead decided to clone himself. To prove it he showed a current picture of me alongside a picture of himself as a PhD graduate. Even I had to admit that our pictures looked alike. I also have to admit that getting a clone of Craig Chandler must be quite tempting considering his success in generating great cultivars for Florida strawberry production. His varieties, particularly 'Festival' and now 'Radiance', have been great steps forward, and he has more promising selections coming through the pipeline.

In reality we are different people, beginning with our backgrounds. I grew up in the small town of Oak Ridge, NC amidst rolling hills and tobacco fields. I cultivated a love for plants and eventually went to North Carolina State University to study horticulture. I later pursued my graduate studies at the University of Minnesota. My wife Terri and I started our family there, and I am blessed to have Isaac (3.5 yrs) and Claire (1.5 yrs). Aside from learning important things in Minnesota like how to live in 30 below zero temperatures without dying of frostbite and drive in a blizzard, I really enjoyed fishing in the summers and took several trips to the Canadian border. Needless to say, I'm looking forward to Florida fishing, and I won't be missing the Minnesota winter!

During my first year I will be learning the breeding process at Craig's elbow. I'm grateful he's staying this season to ease the transition. I would also like to enlist your help as I learn how you grow strawberries. I plan to visit as many of you as I can, and I would also like to extend an open invitation to the growers to visit the GCREC at any time. I plan to learn a lot as I observe your operations, and I welcome your input and advice.

All of you should know from the start that I am committed to continuing Craig's progress in developing Florida varieties. We have a great team of researchers working on strawberry at the University of Florida. Together, I believe we can make continued progress using all the tools at our disposal, including traditional breeding and new technologies. I'm excited for what the future holds!

Fighting Phytophthora Crown Rot

Jim Mertely and Natalia Peres, Sept 2009

Crown rot diseases often start early in the season, and may kill strawberry plants even before they begin to produce. Crown rots are caused by different fungi including *Colletotrichum* (the cause of anthracnose crown rots), *Macrophomina* (charcoal rot), and *Phytophthora* (Phytophthora crown rot). *Colletotrichum* spp. have been responsible for the majority of plant losses in our area. However, Phytophthora crown rots are gaining in importance and deserve more attention.

P. cactorum has been identified as the main cause of Phytophthora crown rot in Florida. Other species may also be involved, but in general, all the Phytophthora produce similar reddish brown infected areas inside diseased crowns (Fig. 1). Once the crown is sufficiently damaged, which may take a few days to a few weeks, the top wilts and dies (Fig. 2). *Phytophthora* species are commonly called water molds, but actually are more closely elated to brown algae than to the fungi. They produce several types of spores, the most

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interesting of which is the zoospore. Zoospores have tiny flagella that allow them to swim in water films on the plant surface and in the soil water matrix. For this reason, infection is more likely to occur under wet conditions, in low spots, or in poorly drained soils. These conditions may occur in the nurseries resulting in infected transplants that are eventually set in Florida fields.

Fig. 1. Internal crown rot symptoms.

Fig. 2. Plant collapse due to crown rot.

Visual examination of the transplants is not a practical way to determine if Phytophthora is present. Waiting until many plants show symptoms in the field is also a poor option, particularly for susceptible cultivars. Based on our general observations, the Florida cultivars Carmine, Sweet Charlie, Florida Radiance, and Winter Dawn are highly susceptible to Phytophthora crown rot, while Florida Festival is more resistant. Florida-grown cultivars will be tested for susceptibility to Phytophthora crown rot in a variety trial at the Gulf Coast Research and Education Center (GCREC) this fall. Similar trials in California have shown that Catalina, Diamante, and Ventana are susceptible while Aromas, Camarosa, and Camino Real are moderately to highly resistant.

To control Phytophthora in highly susceptible cultivars, growers should consider a preventative program. Two different chemistries are available for this use. One is mefenoxam (metalaxyl), the active ingredient in Ridomil Gold and Metastar. These products are injected through the drip tape and are highly effective against Phytophthora diseases in many crops. In strawberries, they have also been used curatively, i.e, after the first diseased plants are observed in the field. A serious drawback is that one application costs from $50 to $100 per acre, and two applications may be needed to treat a seriously diseased crop. Products containing potassium phosphite or potassium salts of phosphorus acid are less expensive alternatives. This group includes the phosphite fungicides Fosphite, Fungi-Phite, Helena Prophyt, K-Phite, Phostrol, and Topaz and the related aluminum derivatives Aliette, Legion, and Linebacker. Phosphites and their derivatives are generally applied as foliar sprays, although some are also labeled for drip application. Members of this group are not curative, and multiple applications are needed beginning immediately after the plants are watered in. The effectiveness of a combined program consisting of a single curative application of Ridomil Gold or Metastar followed by foliar applications of a phosphite needs to be investigated.

Biological products such as Actinovate and Rhapsody are also labeled for the control of Phytophthora crown rot in strawberries.

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Similar products may become available over the next few years. Research is needed to determine whether these products provide an acceptable level of control under Florida conditions.

Growers of Phytophthora-resistant cultivars may also see plants collapse and die early in the season. Although Phytophthora crown rot could be involved, the true culprit may be another crown or root rot pathogen. In these cases, we strongly recommend submitting a sample to the UF Plant Diagnostic Lab at GCREC. There, the pathogen will be isolated and identified, and control recommendations will be provided, usually within 3 to 5 days. A good sample consists of 5 to 6 plants in early stages of collapse or decline with their roots still intact. Place the plants in a plastic bag to keep the roots from drying out but do not add extra water to the bag. Any questions concerning samples and sampling can be directed to Dr. Jim Mertely at (813) 633-4131 (O) or (813) 434-7543 (cell). Remember that the GCREC Plant Diagnostic Lab is now charging a fee. Checks for $40 should be made to the University of Florida.

Notes on Cultural Practices Considering Including Sulfur as Part of the Fertilization Program for Strawberry

Bielinski M. Santos

Sulfur (S) is a structural component of the essential amino acids methionine and cysteine, which are building blocks for many proteins in plants. However, fertilization programs for vegetable and small fruit crops have traditionally focused on the application of other elements (e.g. nitrogen, phosphorus and potassium). There were two main reasons why little attention has been paid to S fertilization. First, S was a common component of widely used fertilizers, such as triple super phosphate and ammonium sulfate. Second, there were significant atmospheric inputs from acid rain generated from burning S -loaded fossil fuels used in industries and by motor vehicles. Nevertheless, this situation has dramatically changed during the last decade. Granular and liquid fertilizers no longer rely heavily on sulfates, and stringent federal and state environmental regulations have reduced the incidence of acid rain. Therefore, S deficiencies are likely to occur.

In most crops, typical S deficiencies are generalized leaf yellowing or light green foliage with weak plant vigor. These symptoms are very similar to those caused by the lack of other major nutrients, particularly nitrogen. This frequently confounds the ability of growers, researchers and extensionists to diagnose S deficiencies correctly. Deep sandy soils in west central and southwest Florida have modest organic matter content, reducing the capacity for S retention. Thus S leaching is likely to occur before root absorption takes place.

Research conducted at the GCREC has shown significant strawberry yield responses (up to 11%) to S fertilizers. There are a variety of S-containing fertilizers in today's market: Ammonium sulfate (21% N, 24% S), sulfate of potash (42% K, 18% S), liquid calcium thiosulfate (10% S), and elemental S (90% S), among others. In the case of the latter, microbes in the soil convert the elemental S to the sulfate ion, which is what plants absorb. This S source is widely used to lower pH because it generates acidity in the soil. If a grower has applied elemental S in the strawberry field during the last year, probably the S levels in the soil are sufficient for satisfactory crop growth. Conversely, using certain drip line cleaners, such as diluted sulfuric acid, indirectly provide S to the crop.

In any case, having a S source either preplant granular (elemental S or a sulfate-

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based fertilizer) or as a drip-applied formulation (calcium, potassium or magnesium thiosulfates) will provide the S strawberry needs for quick establishment and flowering. It has been determined that a S rate between 25 and 50 lb/acre may suffice the crop. Also, it appears that there is little difference among sources (i.e. granular and liquid), as long as the nutrient is present and available in the soil during root development and first flowering. It is recommended to perform at least one foliar nutrient test during the season to check the status of this nutrient, which should be from 0.3 to 0.5% in the upper mature leaves during mid-December.

Methyl Bromide Transition Strategy: A Fall 2009 Focus on Drip Fumigation under Old and New Plastic

J.W. Noling and Alicia Whidden

The fumigation season in the Plant City area started in mid August, and in a timeframe much earlier than usual in our opinion. In previous years, the fumigation season has always seemed to begin in a mad dash just after Labor Day. In driving around the area, there also appears to be about 30% less new plastic being laid this fall than there was last fall. In these fields of 'old, twice-used' plastic, growers are planning to double crop 10, 20 and even 30 acre fields with a second crop of strawberries. We have to confess, some of these fields are overgrown with weeds in the middles and plant holes, while in other fields the low cost 1 mil plastic from the previous season is brittle and zippering easily under pressure. We have to believe that these fields may produce some disappointing results for double cropped berries.

The primary appeal in double cropping berries after berries is to save money. Other growers trialing the double crop concept are not quite sure how much money is actually being saved when actual field and plastic maintenance and herbiciding costs are factored into overall production costs. We are of the opinion that there was a lot of berries produced last year but many growers didn't get the prices needed to make it a truly profitable cropping season. The decreased supply of methyl bromide with possibility of shortages, coupled with the increased price of $5.70 / lb for a formulation of 50% methyl bromide and 50% chloropicrin (which most growers don't seem to care for in first place) also has encouraged growers to try something different and economical. Finally, there were the observations and testimonials from a few of the double cropping pioneers in the industry which made a huge difference in comfort level and attitude about trying something new.

For double cropped strawberry with an existing bed and plastic mulch cover, the choice for method of fumigant application becomes very simplified. Only a drip, rather than chisel applied fumigant, can be used for bed treatment. One of the reasons why bedding may have started earlier this year might be because many growers after bedding, will put out a drip fumigant and will need the extra time to establish the irrigation and wait for the fumigant to dissipate. So it seems that there will be a considerable amount of drip fumigation going on this season under both old and new plastic. Maybe as much as about 40% of the acreage.

As we reported at AgriTech, there is also a lot of drip fumigation going on in California strawberry as well. This past year, 55% of the 37,000 acres of California strawberry were using Telone Inline, and to some extent Chloropicrin EC to replace methyl bromide soil fumigation. Vapam HL was also often used in sequential combination, being applied 7 days after InLine or Chloropicrin EC,

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for weed control. With high levels of production and pest control efficacy maintained, California has set an encouraging precedent for drip applications of the soil fumigants as effective alternatives to methyl bromide and chloropicrin soil fumigation for strawberries.

In our last newsletter we expressed concern about the reliance on drip fumigants like Vapam and K-PAM for crop termination and as preplant treatments for the fall double crop of strawberry. We really didn't like the idea of 'bettin the farm' on a new, largely untested, production practice. Our concerns were based on likely application procedures which would include Mazzei injectors (which can seriously rob pressure and emitter flow) and injection schedules which were not long enough or of suitable chemical concentration.

In general, our concerns were based on applications where these products would be applied too quickly, producing a series of circular wetted zones (spots) or only in a relatively narrow strip down the middle of the bed with little or only limited gas phase movement into the shoulders. We rationalized that this would likely leave a relatively high level of surviving nematodes in the shoulders of the bed which could remain or migrate into deeper soil only to return after planting.

We were also aware however that a full summer of solar heating of a black plastic covered bed might provide an appreciable level of thermal control of the nematode. In May, we placed a number of recording temperature sensors at 5 and 12 inch soil depths on both the east and west bed shoulders and at the bed center. We were pleasantly surprised to discover how temperatures could cycle between 85 and 118º F on a daily basis for the duration of the summer for all bed shoulder locations and to a somewhat lesser degree even in the bed middle (Fig. 2). Sting nematode has well defined optimal temperatures for growth, development, and reproduction and these are all typically defined in the range of 75 to 90º F at most.

In the absence of food, lipid reserves are burned faster at higher temperature, and nematodes which do not die from temperature induced heat stress, are more than likely to die from starvation. So, it would seem that maybe the drip treatment for a double cropped bed doesn't need to be perfect if the fields are maintained weed free and the beds are allowed to bake in the sun all summer long. Given the number of fields trialing double cropping, we shall soon be able to see whether the performance of the drip applied fumigants was complemented by these daily acts of mother nature.

What are the drip fumigants that are going to be used in Florida strawberry this season? Nothing new there, they will include Vapam HL (75 gpa), K-PAM HL (60 gpa), Telone EC (12 gpa), Telone Inline (35 gpa), Chloropicrin EC (200 lb/a), or Pic Clor 60 EC (300 lb/a).

In recent years we have demonstrated the value of drip treatments both as crop termination treatments in the spring and as preplant treatments in the fall under new plastic. This past year we were able to show that two drip tapes per bed, rather than one, significantly improved nematode control and strawberry yield (Fig. 1). Even with methyl bromide applied by chisels in the row before planting, there was an increase in berry yield which could not be attributed to the fumigation effect, but more likely to the improved nutrition and water availability with the second tape.

This same research demonstrated that PIC Clor 60, even at 300 lb/a did not really do a very good job of controlling sting nematode because of the reduced rates of Telone applied at the expense of the increased level of

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chloropicrin. It simply was not enough Telone for a high nematode pressure field. Looked at another way, there was too much chloropicrin, not a particularly effective nematicide, for a hot nematode field. This fall we will focus our research on Telone Inline as a fall treatment in combination with different spring crop termination treatments such as Telone EC (10-12 gal), Vapam (75 gpa), or Kpam (60 gpa). We will also focus on prebed applications of Telone C35, chisel applied to flat ground in advance of bed formation to avoid respirator requirements for workers in the field when it is applied in-bed with backswept knives. We would like to conclude, as we have in other newsletter articles, with a bulleted list of considerations that growers should be aware of and follow to the extent possible for all drip applied fumigants.

DRIP FUMIGATION CONSIDERATIONS

Maintain adequate soil moisture prior to drip fumigation. Do not begin fumigant injection until the bed is preirrigated. Fumigants move vertically in dry soils and need water filled pore spaces to encourage lateral movement of the water front.

Start with a clean, leak-free drip tape (chlorine, acids, peroxides).

During injection, insure adequate / uniform line pressure (10 psi) between and along rows. Monitor line pressures at row ends, particularly if a Mazzei Injector is used for chemical injection. Injection periods should be extended if suitable pressure (10 psi) cannot be achieved. Growers should remember that one word describes fumigation uniformity along and between field rows: PRESSURE.

Very high end-of-season nematode populations require maximum label rates of fumigant application. Remember, there is no way to effectively control the nematode after planting.

Insure lethal concentration of fumigant in irrigation water for sting nematode control (1000 ppm Telone II or Telone Inline; 1500 ppm Vapam; 2800 ppm KPAM). Do not inject a Telone product at greater than 1500 ppm or Chloropicrin at greater than 1500 ppm because of possibilities for irreparable damage to PVC.

To maximize lateral spread of the fumigant in water phase (50-60% of bed with single tape), plan to inject fumigant at least 3 hrs (i.e., 200 minutes or more). Split applications are not recommended since they have not demonstrated improved lateral movement and persistence of fumigant gases across the bed. Also, avoid the temptation of reducing the injection period of the fumigant because of wet, saturated soils, and weather forecasts predicting additional rainfall. Short injections to wet soils will produce disappointing results. A new level of patience we believe is in order.

Consider a second drip tape to improve lateral distribution of the fumigant in water phase (75-85%) and cross bed movement in gas phase, as well as to increase fumigant performance, crop yield, and pest control efficacy.

Under new plastic, burial of the drip tape 1 to 2 inches should prevent line kinking of the drip tape along the row. It does however make it more difficult to replace if the need arises.

Flush the irrigation system and drip tape following fumigant injection for at least 20-30 minutes. Consider longest / farthest run distance and 2x tube volumes.

Do not assume that main and submain valves

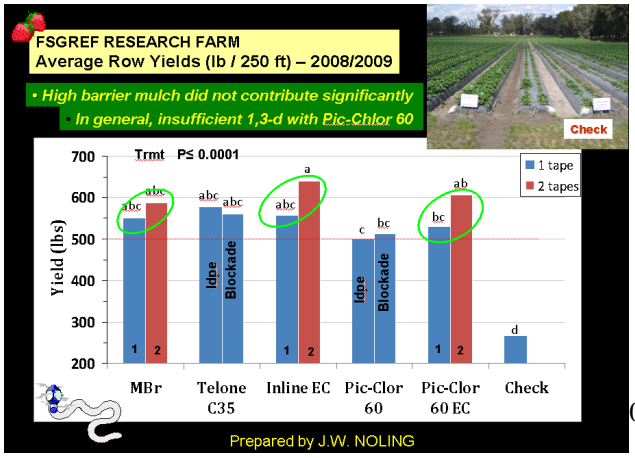

Fig. 1

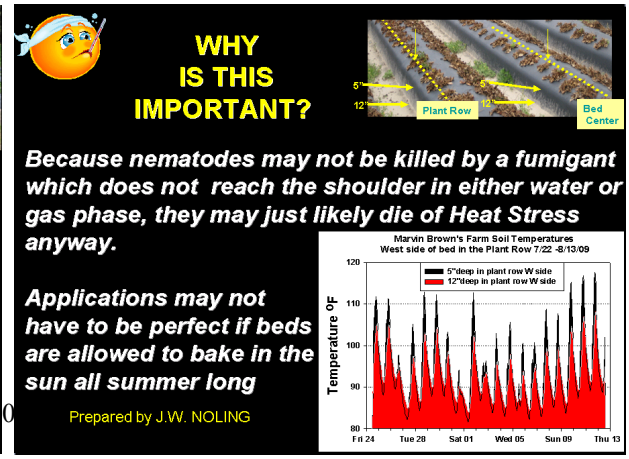

Fig. 2

Berry/Vegetable Times Goes Electronic

Due to budget cuts, UF has eliminated bulk mail, so starting this October BVT will no longer be mailed. If you are currently receiving a paper copy of the newsletter and would like to continue receiving the information it contains, please contact Christine Cooley at ccooley@ufl.edu or 813-634-0000. You can also view current and past issues on our strawberry website at http://strawberry.ifas.ufl.edu. Limited copies will be made available at the Hillsborough County Extension Office and at GCREC in Balm.

Vegetable crops lose maneb and gain new Bravo uses, while the EPA delays review to expand the mancozeb label.

Gary E. Vallad

Last spring, United Phosphorus, the sole registrant of technical maneb voluntarily cancelled the registration for maneb. For several vegetable crops, maneb is the only broad-spectrum fungicide available. A registration for mancozeb, an ideal broad-spectrum replacement for maneb, was submitted to the EPA for review this summer. However, the review date for this petition has now been postponed until March 2010. This has reignited fears that existing stocks of maneb will be gone before the end of 2009. Florida pepper producers would be most adversely impacted by such a shortage, as they rely on maneb for mixing with copper-based fungicides to control bacterial spot caused by *Xanthomonas euvesicatoria* (formerly *X. campestris* pv. *vesicatoria*) in which copper-tolerant isolates are predominant throughout the state. Mancozeb and maneb are both dithiocarbamate fungicides commonly used as protectants against a broad spectrum of fungal pathogens on numerous vegetable and fruit crops. Mancozeb is also labeled as a common tank mix partner with copper-based pesticides for the control of foliar diseases caused by bacterial pathogens, such as phytopathogenic species of *Xanthomonas* and *Pseudomonas* on tomato, but not pepper. An attempt this spring to develop a Section 18, crisis exemption, for mancozeb on pepper was abandoned, as maneb supplies were found to be adequate. A new survey in August reached a similar conclusion. While there should be adequate stocks of maneb available for this fall and the following spring, there is no guarantee that supplies won't be redistributed if a demand arises elsewhere (ie. Mexico/California). As a precaution, pepper growers should contact their local distributor to ensure adequate availability through next spring. Hopefully, at such time, the EPA will have reviewed the mancozeb registration which will include expanded usage on several vegetable crops, including pepper. A letter was also sent by Mike Aerts of the Florida Fruit and Vegetable Association, urging the EPA to expedite the review for the new uses of mancozeb. Regardless, a new label will probably not be available for use until the summer of 2010 at the earliest and many other crops will still remain orphaned with no broad-spectrum fungicide available (see table below).

Growers should also be aware that the EPA did approve the addition of several new vegetable uses to the Bravo (chlorothalonil) label. These additions are summarized in the table below. Growers using old stocks should contact their distributor for the new label. The expansion of the Bravo label will satisfy some of the needs for broad-spectrum fungicide control in crops orphaned by the loss of maneb. Unfortunately, Bravo (chlorothalonil) is not effective against bacterial diseases and will not replace maneb as an effective tank-mix partner with copper for the control bacterial spot on pepper or other vegetables.

Listing of Florida vegetable crops affected by the loss of maneb, and Bravo (chlorothalonil) label expansion on Page 12.

Please remember…

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 named 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.

Florida vegetable crops affected by the loss of maneb, and Bravo (chlorothalonil) label expansion.

Crop	Registration status as of August 2009		
	Maneb (existing stocks)	Mancozeb	Chlorothalonil
Mancozeb Petitioned Crops			
Broccoli	Yes	No*	Yes
Cabbage	Yes	No*	Yes
Lettuce	Yes	No*	No
Peppers	Yes	No*	Yes
Pumpkins	Yes	No*	Yes
Squash, winter	Yes	No*	Yes
Orphaned Crops – lack supporting petition for mancozeb			
Beans, dry	Yes	No	Yes
Brussels sprouts	Yes	No	Yes
Cauliflower	Yes	No	Yes
Chinese cabbage	Yes	No	Yes
Collards	Yes	No	No
Endive	Yes	No	No
Eggplant	Yes	No	Yes
Kale	Yes	No	No
Kohlrabi	Yes	No	Yes
Mustard greens	Yes	No	No
Onion, green	Yes	No	Yes
Turnip tops	Yes	No	No

*New mancozeb uses being sought by Dow, DuPont, or IR-4; expected March 2010.

Pesticide Registrations and Actions

- Based on a request by IR-4, the EPA has approved tolerances for the fungicide cyazofamid (Ranman®). Tolerances of importance to Florida include okra and fruiting vegetables (group 8). (*Federal Register*, 7/8/09).
- Based on a request by IR-4, the EPA has approved tolerances for the insecticide/miticide fenpyroximate (Portal®). Tolerances of importance to Florida include cucumber, okra, melon (group 9A), and fruiting vegetables (group 8). (*Federal Register*, 7/29/09).
- Based on a request by IR-4, the EPA has approved tolerances for the insecticide indoxacarb (Avaunt®). Tolerances of importance to Florida include bushberry (blueberry). (*Federal Register*, 7/10/09).
- Based on a request by IR-4 and Bayer CropScience, the EPA has approved tolerances for the fungicide fenamidone (Reason®). Tolerances of importance to Florida include cilantro, okra, turnip greens, and root vegetables except radish (group 1B). (*Federal Register*, 7/15/09).