UNIVERSITY OF FLORIDA

EXTENSION

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SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

December 22, 2006

Mostly moderate temperatures prevailed across South Florida over the past few weeks. Daytime highs for the period were in the 60's 70's and 80's and nighttime lows in the 60's, 50's and 40's.

Most areas received light showers, except for some areas in the southern Peninsula during the week of December 11 through 17. East winds off the Atlantic bought heaviest accumulations to the east coast. Reports indicate that West Palm Beach as well as some surrounding areas recorded over nine inches of precipitation for the week. Fort Lauderdale received over four and a quarter inches of rainfall. The rain interrupted some field activities making spraying difficult and caused flooding and damaged crops in some places. Most west coast locations reported less than a half an inch for the period although heavy fogs and mostly cloudy conditions punctuated by light misty rain have favored disease development in all areas in recent days.

FAWN Weather Summary

Date	Air Temp °F		Rainfall	Hours Below Certain Temperature (hours)							
	Min	Max	(Inches)	40°F	45°F	50°F	55°F	60°F	65°F	70°F	75°F
Balm											
11/24 – 12/22/06	**42.3**	**81.8**	**0.22**	**0.0**	**6.4**	**13.0**	**14.4**	**18.2**	**32.2**	**34.4**	**134.8**
Ft Lauderdale											
11/24 – 12/22/06	**53.3**	**82.6**	**4.76**	**0.0**	**0.0**	**0.0**	**4.9**	**10.1**	**36.6**	**9.2**	**12.8**
Fort Pierce											
11/24 – 12/22/06	**47.1**	**84.1**	**2.65**	**0.0**	**0.0**	**0.8**	**2.1**	**20.4**	**52.7**	**18.0**	**68.8**
Homestead											
11/24 – 12/22/06	**50.0**	**83.3**	**1.14**	**0.0**	**0.0**	**0.0**	**6.7**	**1.3**	**7.2**	**5.5**	**8.6**
Immokalee											
11/24 – 12/22/06	**43.4**	**86.6**	**0.15**	**0.0**	**9.5**	**8.6**	**1.4**	**40.5**	**82.5**	**42.5**	**27.7**

Wishing you and yours a Blessed and Merry Christmas and all the best for a Happy and Prosperous New Year

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Most harvesting is on schedule as producers satisfy the holiday demands. Harvesting of the fall crop okra is nearing the end. Crops coming to market include cucumbers, eggplant, endive, escarole, okra, peppers, radishes, snap beans, squash, sweet corn, tomatoes, watermelons and specialty items. Quality is mostly good although some problems with rain checking have been reported from high rainfall locations. Cooler temperatures aided strawberry development and growth in the Plant City-Dover area.

The short-term forecast from the National Weather Service in Miami calls warm and increasingly humid conditions over the next several days with an increasing chance of showers and thunderstorms through Christmas Day. Chance of rain today will be 40 % increasing to 60 % on Christmas. Much cooler drier area will settle into the area by mid week but return flow will quickly bring deep tropical moisture back to south Florida by next weekend setting the stage for more rainy weather. For additional information, visit the National Weather Service in Miami website at **http://www.srh.noaa.gov/mfl/newpage/index.html**

Insects

Leafminer

Growers and scouts in Palm Beach report that leafminer pressure has been consistent. Pressure has been moderate high in number of crops and growers report that they have been tough to control in many places with growers treating fields on a regular basis.

Around Immokalee, reports indicate that leafminers are active and are the major pest in tomatoes at this time. Pressure is increasing but variable depending on location with some respondents indicating they just won't quit and others reporting they are starting to spray some fields.

Respondents from Manatee County report high adult leafminers counts in many fields.

In Homestead, reports indicate that leafminer pressure is high on squash, beans, and tomatoes.

With the on-set of cooler weather across the peninsula, growers across the state can expect to see an increase in leafminer pressure. Leafminers attack many row crops but are particularly damaging on celery, crucifers, cucurbits, okra, potato and tomato. Florida growers report that leafminers are the second most important tomato insect pest especially in south and central production areas. Leafminers are present for much of the year in Florida. In south Florida, populations peak between October and March while in central Florida they are a problem in both spring and fall.

The two major species of leafminer that cause problems in vegetables in Florida are the vegetable leafminer *(L. sativae)* and most commonly *(Liriomyza trifolii)* - sometimes referred to as the celery leafminer but which has no approved common name. The adults are small yellow and black flies about the size of a gnat. The female punctures or "stipples" the leaves with her ovipositor to lay eggs in the leaf tissue or to feed on sap.

Leafminer damage is easily recognized by the irregular serpentine mines in leaves, which are caused by feeding larvae. Heavy leafmining damage can reduce photosynthesis and cause leaf desiccation and abscission. The yellow maggots with black, sickle-shaped mouthparts feed on the mesophyll or chlorophyll tissue between upper and lower leaf surface leaving a winding trail or pattern through the leaf. The tunnel is clear with the exception of a trail of black fecal material left behind as the maggot feeds.

There are three larval stages. Each larval instar is completed in 2 - 3 days. The maggots feed approximately 7 days growing to about 1/10 to inch in length prior to exiting the leaf to pupate on the ground or mulch under infested plants.

Leafminer injury is readily visible to the grower but healthy plants can tolerate considerable damage without excessive loss of vigor and yield. The Florida Tomato Scouting Guide sets action thresholds at 0.7 larva per plant for young plants with less than 2 true leaves and 0.7 larva per 3 terminal leaflets for larger plants. Heavily damaged leaves will often drop, due in part to entry of pathogenic organisms into old mines.

An integrated pest management program that stresses conservation of natural enemies is the primary tactic for the successful control of leafminer. Chemical control is difficult due to the feeding habits inside the leaf of the host plant. Insecticides that specifically target the leafminer are recommended as use of broad-spectrum materials may decimate beneficial insects including those that attack leafminer. This often results in a larger leafminer problem if the pesticide reduces field densities of leafminer parasites.

Fortunately, populations are usually prevented from reaching truly damaging levels by a number of parasites that attack leafminers. Several parasites for this insect have been recorded in Florida, but parasitic wasps such as *Opius*, *Diglyphus* are most common. Wasp larvae develop on or in the leafminer larva or pupa. The host ceases to feed and the parasitoid egg or larva is visible through the leaf epidermis using a hand lens against strong light. In scouting fields, growers should be careful to note the number of parasitized mines before deciding to apply insecticides.

Due to its feeding habit, this pest is resistant to many insecticides. Cyromazine (Trigard) alternated with abamectin (Agrimek) are effective against leafminer in tomato. Both of these products have limited crop registrations and must not be used on unregistered crops. Spinosad (Spintor, Entrust) has also given good results and is labeled on a wide range of crops. Some other materials that may be used to conserve beneficials include azadirachtin (Neemix) and insecticidal oils. Neemix and Entrust are approved for use by organic growers.

Field sanitation is an important control tactic that is overlooked. When crops are not present in the fields, leafminers can survive on a variety of broad-leaf weeds. These plants serve as reservoirs for pest.

Broad Mites

Growers and scouts on the east coast indicate that broadmites still continue to cause problems in eggplant and pepper. One commented that he has sprayed more for broadmites this year than in the past six years.

Around SW Florida indicate broadmites continue to fluctuate in pepper but just won't quit. Growers report that they can knock them down and two weeks later they are back.

Worms

Around Southwest Florida, reports indicate that worm pressure has slowed a bit in some places but pressure remains high in others with new hatches and egg masses being detected. Reports indicate that scouts are finding mainly southern armyworms with some beet armyworms and loopers through in for good measure. Reports indicate that pickleworms continue to cause problems in squash in some places.

Respondents indicate fall armyworm pressure in sweet corn is still pretty high from Martin County to Belle Glade. Dr Gregg Nuessly, UF/IFAS EREC advises it is normal for them to remain fairly high until after the first of the year. There is usually a drop off for about a month after which they normally start building again. Lesser cornstalk borers have been troublesome in several crops, including corn, beans and sugarcane, particularly on the silica soils.

On the East Coast growers and scouts report s indicate that worm pressure is mostly low to moderate depending on location. Growers are finding mostly beet armyworms and loopers.

Whiteflies

Reports from Manatee County indicate that whiteflies have been "horrible" in a number of places with large numbers of adults moving around.

Around Immokalee, whitefly levels are mostly low but building in some places. Some spikes in adult numbers (up to 5 per plant) have been reported in some younger plantings.

On the East Coast, respondents indicate that whitefly numbers are low to moderate. Some higher counts have been reported in young potatoes.

Around Homestead, whiteflies are a concern in beans, squash and tomato.

To review the revised UF/IFAS Recommendations for Management of Whiteflies, Begomovirus, and Insecticide Resistance for Florida Vegetable Production and the New Tomato Burn-Down Rule, visit the Manatee County Extension website at http://manatee.ifas.ufl.edu/vegetable.htm. Remember that good sanitation and prompt clean up is important in management of whiteflies on a regional basis.

Aphids

Aphids are increasing in a variety of crops around Palm Beach County. Reports indicate that aphids are an issue in Chinese brassicas and that some growers have also had to treat cucumbers and pepper where colony formation was detected.

Around Belle Glade, Dr Gregg Nuessly reports aphids are definitely on the rise. Weekly suction trap aphid counts here at UF/IFAS EREC remain high and aphids are showing up in high numbers in cabbage.

Around Southwest Florida aphids are around in mostly low numbers.

Pepper Weevil

Around Southwest Florida, pepper weevils are building in several older fields and have been found in some younger plantings.

A few pepper weevils have been reported in Palm Beach County.

Thrips

Growers and scouts on the east coast are reporting a sharp increase in thrips numbers in pepper. Reports indicate that they are "bad" in some places. Both Florida flower thrips and *Thrips palmi* are present depending on the location and there have been several reports of scarring of fruit under and around the calyx.

Diseases

Late Blight

Growers and scouts around Immokalee are still finding some new late blight in a number of scattered locations, mostly in tomatoes. Incidence and severity is variable with a few fields moderately to highly infected with late blight but most locations have very low infections. Typically growers are finding a few scattered single lesions in the infected fields and on many farms no late blight is present. Potatoes are about the same or lower, a few single leaf lesions here and there. There have been a few reports of late blight on transplants so growers would be advised to examine plants carefully.

There have been no reports of late blight from other areas at this time. Dr. Pam Roberts, Plant Pathologist at UF/IFAS SWFREC has launched a website that pulls together current information on late blight from various sources and which will help keep growers appraised of the late blight situation in Florida. You can check out the Late Blight Information Center at http://swfrec.ifas.ufl.edu/plant/late_blight/

Late blight can easily devastate a tomato or potato field within a few weeks if it is not properly controlled. Since the disease can spread so rapidly, growers should scout their fields thoroughly each day, especially when cool and wet conditions conducive to disease development prevails. Since late blight symptoms may be confused with symptoms of other diseases, the following diagnostic pointers may help growers distinguish between the late blight and other diseases.

Late blight symptoms on leaves appear as irregularly shaped brown to purplish lesions with indefinite border lesions can span veins. The lesions may be seen any time of day, on any stage of plant growth and on leaves of any age. Velvety, white fungal growth may appear on the lower surface of affected leaflets early in the morning before leaves dry and/or in the lower canopy.

On stems, purplish lesions may be seen any time of day and may be found any where on the stem. Cottony, white growth of fungus on stems with lesions can often be seen early in the morning and/or in the lower canopy. Stems with lesions are brittle and break easily. Lesions are confined to epidermis and cortex. Leaf rolling and wilting is often associated with stem lesions and purpling of leaflets may occur in some varieties.

The disease thrives under cool and wet conditions. Temperatures between 50 and 80°F combined with moist conditions such as rain, fog, heavy dews, or relative humidity above 90 percent are conducive for disease development. Night temperatures in the mid-fifties with daytime temperatures from the mid-fifties to mid-seventies are ideal for this disease.

Currently, fungicides are the most effective means of controlling late blight and will remain the primary tool until cultivars with resistance to this disease become available. Fungicides slow the rate at which the disease develops in the field by creating a protective barrier on the foliage. Just applying a chemical, however, does not necessarily equate with effective disease control. Relative effectiveness of a product, coverage, and timing must be factored into the equation for maximum benefit.

Numerous fungicide products are registered for late blight control. Protectants, as the name implies, protect foliage from infection by spores. Protectant chemicals must be well distributed over the leaf surface and must be applied before spores land on leaves. They are ineffective against established infections.

Systemic products become distributed locally within plant tissues and protect foliage from infection by spores. Newer products such as Curzate (DuPont) boast "kick back" action that can help arrest infestation if applied within 48 –72 hours of initial infection. They may kill some established infections and may suppress production of new spores. Even a short break in spray schedules, despite what is said regarding some of the newer fungicides, can result in a dramatic increase in blight under the conditions we have had during the past two weeks.

In Florida, it has been observed that seldom does a widespread late blight epidemic occur on tomatoes in the Manatee-Ruskin area unless the disease was present in the Immokalee area and/or Dade County. Since late blight has been confirmed on tomato in Immokalee, growers in other areas are advised to adhere to a preventative spray program.

Growers are advised to be aware of the presence of the disease in SW Florida and should be alert for the appearance of symptoms in their fields as well as be sure to apply protective fungicides such as chlorothalonil. In addition, it may not a bad idea to put out an application of the late blight fungicide of your

choice - Previcur Flex (Bayer Crop Science), Reason (Bayer Crop Science), Curzate (DuPont), Forum (BASF) to help prevent possible infections. No other disease will find an unprotected field as rapidly as late blight.

Bacterial Spot

Growers and scouts on the East Coast report that bacterial spot on pepper and tomato has increased following recent rainy weather with new infections in a number of places. Severity is low and occurrence is scattered at this time. Dr Ken Pernezny reports although still low the amount of spot on tomato and pepper is worrying given the forecast of a period of substantial protracted rainfall over the Christmas weekend. Ken notes that everything collected from recent sampling surveys is resistant to copper as usual.

Around Immokalee, bacterial spot has flared in a number of places in recent days and continues to move higher up tomato plants and several mature fields have moderate infections. Overall, bacterial spot is lower in pepper.

Reports from Homestead indicate that bacterial spot is present at low levels in some tomato fields.

Target Spot

Around Southwest Florida, target spot just won't quit. Target spot pressure is very high at the moment with the recent rainy, cloudy humid weather. We are seeing lots of tomato plants with the entire inner foliage consumed by target spot and lesions also showing up on fruit.

Reports from the east Coast indicate that target spot has started to show up in a few locations. Incidence and severity is low.

Alternaria

Respondents on the East Coast report that early blight is common on older tomato.

Around Immokalee, early blight has increased somewhat and incidence and occurrence is mostly low.

Reports from Homestead indicate that Alternaria is widely present in beans and is affecting pods in some instances.

Downy Mildew

Around Immokalee downy mildew is widely present in cucumbers and squash and has reached moderate to high levels in some older fields. Organic growers are having particular difficult in achieving control and disease is a limiting yields.

On the East Coast, downy mildew is widely present on cucumbers. Incidence and severity is moderate**.**

Leaf symptoms can be used to diagnose downy mildew in the field in most cases. On cucurbits other than watermelon, small yellowish areas occur on the upper leaf surface. Later, a more brilliant yellow coloration occurs with the internal part of the lesion turning brown.

Usually the spots will be angular as they are somewhat restricted by the small leaf veins. When the leaves are wet, a downy white-gray-light blue fungus growth can be seen on the underside of individual spots (lesions). As the disease develops an exaggerated upward leaf curling will often occur.

Some growers are reporting good control using high rates of Previcur alternated with Ranman. They stress that it important to begin application early before symptoms are seen, even as early as the first true leave stage.

Powdery Mildew

Growers and scouts around South Florida are reporting increasing problems with powdery mildew on squash and cucumbers. Incidence and severity is high in some older fields. Powdery mildew is more wide spread and a bigger problem in squash.

Reports indicate that powdery mildew is also widely present on cucurbits on the east Coast. A few reports of powdery mildew on pepper have also been received.

Around Hillsborough County, powdery mildew is being reported on some strawberry varieties.

TYLCV

Around Southwest Florida, tomato yellow leaf curl virus remains mostly low.

Respondents on the East Coast continue to report mostly low TYLCV levels with scattered plants being found mostly on field edges and borders.

Reports from Homestead indicate that TYLCV is an issue in tomato. Some reports suggest that TYLCV incidence on tomato and BMG on beans may be higher than this time last season

Around Manatee County TYLCV is widely present – incidence and severity is variable depending on location.

Fusarium

Around Immokalee, fusarium crown rot is showing up in some end rows in older ages but incidence is mostly low.

Scattered problems with fusarium crown rot on tomato have also been noted on the East Coast.

Reports from the Palmetto Ruskin area note that some tomato growers are experiencing major problems with Race 3 fusarium.

Southern Blight

Reports from Manatee County indicate that Southern blight is widespread and scouts have noted that it is present in nearly every tomato field visited.

Respondents in Palm Beach indicate that southern blight is present in a number of places on pepper, tomato and eggplant.

Cercospora Leaf Spot and Blotch on Beans

Dr Rick Raid, UF/IFAS EREC, Belle Glade reports that a leaf blotch and spot has recently been observed on the lower leaves of snap beans grown in the Glades. The malady was diagnosed as Cercospora leaf spot, caused by the fungus *Cercospora canescens*.

Lesions appear as irregular to circular brown necrotic blotches on the primary leaves, and occasionally trifoliate leaves. Necrotic lesions are frequently surrounded by bright yellow haloes, and upon aging, may dry have their centers fall out, giving the leaf a ragged appearance. Leaves with multiple infections may turn chlorotic and necrotic over time, becoming detached and serving as a source of inoculum for future infections.

It is thought that abnormally warm temperatures during recent weeks may be responsible for the appearance of this disease. While Cercospora leaf spot is not usually considered an economic problem, application of a strobilurin fungicide or chlorothalonil should assist if control is deemed necessary. Sulfur, effective for powdery mildew, would probably not be very effective in the control of this disease. If beans are to follow beans, thorough incorporation of old plant debris would also help in limiting future Cercospora blotch development.

Powdery Mildew on Beans

Dr Raid notes that with the exception of last week's rainfall, it has been fairly dry in the Glades and this has prompted the early appearance of some powdery mildew on snap beans. Powdery mildew, caused by the fungus *Erysiphe polygoni*, can infect both the foliage and the pods.

On leaves, powdery mildew appears as white, cottony-like spots, usually on the upper leaf surface. Pods infected by powdery mildew may become shriveled and deformed, rendering them unmarketable. If present in high incidence, powdery mildew may be cause for harvest rejection at the packinghouse, given present day high standards.

For this reason, growers should be on a preventative program for powdery mildew. While strobilurin and sterol inhibiting fungicides have proven to be most effective in recent tests, these should be rotated with broad-spectrum fungicides such as sulfur or chlorothalonil for resistance management.

White Mold on Snap Beans

Rick Raid also cautions growers that as we move into the cooler months for snap beans in Florida, they should be mindful of white mold, caused by *Sclerotinia sclerotiorum*.

Favored by cool temperatures and high soil moisture, it is advised that growers be on a preventative program for this important disease if they are growing beans in fields that have a demonstrated history of the disease or that have been previously cropped to beans or other susceptible vegetable crops within the past several years. This is particularly true if these fields have not been flooded or deep-plowed. These cultural practices destroy or bury the sclerotia, long-term survival structures formed by the fungal pathogen.

If used, timing of fungicides for white mold is critical. Since pod infections typically arise from air-borne spores infecting senescing blooms, most fungicide labels with white mold as the target call for applications at bloom, and/or shortly after. Be careful to observe all pre-harvest intervals.

Gummy Stem Blight

Gummy stem blight is present on cucurbits in a number of locations around South Florida.

News You Can Use

U.S. Growers' Methyl Bromide Allotment Cut

In accordance with the Clean Air Act and the Montreal Protocol, the Environmental Protection Agency issued final methyl bromide production and import critical use exemptions for 2007 last week, trimming the amount

that had been authorized one year ago. The U.S had originally requested an amount equivalent to 29% of historic 1991-baseline consumption, but in December 2005 the authorized amount was reduced to 26.4% of the baseline.

The final authorized amount was further reduced to 24.4% of the baseline, or 6,231 metric tons, because of the increased use of alternatives among methyl bromide users, according to the EPA. Critical use exemptions are permitted when there are no technically and economically feasible alternatives to methyl bromide, such as for strawberry and tomato production, as well as commodity fumigation.

Using Reduced Rates of Methyl Bromide – Recipe for Success

With the increased price of MBr this season, many growers will be looking at using alternatives and/or lower rates and different formulations of MBr with VIF or metallized plastic for the spring crop.

There are a couple of things you need to keep in mind to help insure success. The old standard of high rates of MBr and LDPE was pretty forgiving in many ways. This has all changed.

To help ensure success when using lower rates of MBr with high barrier mulch films, make sure you are using the smaller diameter tubing, flow meters, etc. to insure that you get a good uniform application in the bed.

It is also critical to make sure you keep the plastic rig as close behind the fumigant rig as possible. Having the plastic rig several rows behind the fumigant rig is not going to cut it when you are at these low rates, even if you are using high barrier film.

Low rate applications are not as forgiving and you WILL see the consequences of a sloppy application job.

Research and grower trials in tomato and pepper have established that methyl bromide rates can be reduced by one-half with VIF products and still maintain nutsedge control and crop yields comparable to a full rate with standard films. Unfortunately, there are two drawbacks to most VIF products: cost and handling characteristics.

Today, all VIF is made in Europe and must be imported, thus resulting in much higher cost than standard film. Also, most VIF products are more difficult to lay than standard films in that they are prone to linear sheer under too much tension. Handling characteristics among VIF materials differ significantly, but all are based on polyamides, such as nylon, for their barrier properties and these polyamides do not stretch well. Also, none are embossed at the present time.

Research performed in the past few years, has demonstrated that application of methyl bromide or Telone (Inline) in conjunction with metalized film greatly increased the retention of the fumigant.

In the case of methyl bromide, nutsedge control was obtained with 175 lb./acre of 67/33 under Canslit metalized film that was equal or superior to that obtained with the full 350 lb./acre rate under standard ldpe or hdpe film in each of four experiments. Grower trials confirmed these results. The retention of methyl bromide and resultant nutsedge control with Canslit metalized film was similar to that obtained with VIF at every rate of methyl bromide, ranging from 88 to 350 lb./acre of 67/33

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While it is possible to use VIF or Canslit metalized film to reduce methyl bromide usage rates by one-half, successful use involves more than just reducing gas flow and laying mulch film. Methyl bromide has a high vapor pressure, which means that at typical application temperatures it rapidly becomes a gas and can do so even within the tubing and gas knives. This is an advantage for reduced rate application, but does not solve one inherent problem — uniformity of application.

Typical gas rigs employ three knives per bed. A good fumigation job requires that all three knives deliver the same amount of product per minute so the application rate is uniform in the area being fumigated. When the rate is reduced, there is less fumigant in the system and more opportunity for the formation of bubbles as the methyl bromide "boils." This "boiling" easily can be visualized by inserting small sight glasses in the application equipment at the flow divider just ahead of the tubes, which carry the fumigant to the knives.

Under normal conditions, a certain amount of backpressure exists in the application system and can be measured at the flow divider by installing a pressure gauge. Application of a full 350-lb./acre rate will generate in excess of 30 psi of backpressure at this point. Reducing the methyl bromide flow rate to deliver lower rates per acre will reduce the backpressure measured at the flow divider.

Field experience indicates that backpressure below 15 psi results in non-uniform distribution to the three knives, which means inequalities in rate across the bed. Usually the edges suffer the most and this can be observed later in the season as poor nutsedge control on bed shoulders.

To increase backpressure when using low rates of methyl bromide or any other fumigant, you must decrease the flow capacity of the delivery system between the flow divider and the gas knives. This can be accomplished in two ways. First, you can use a smaller diameter tubing to deliver fumigant to the gas knives. Standard gas rigs use 1/4 inch inside diameter tubing. We have found the use of poly tubing ranging from one-sixteenth to one-eighth inch inside diameter is necessary to achieve balanced or uniform delivery of greatly reduced rates of methyl bromide. Tubing of this size is not readily available, but can be obtained and is an important modification for using reduced rates of methyl bromide with a highly retentive film.

Fine tuning of flow capacity or rate of any tube can be accomplished by increasing or decreasing the length of the tube connecting the flow divider to the gas knife. There is a certain amount of friction loss of flow within any size tube, which increases with increased length and decreased tubing inside diameter. Typical length for one-sixteenth and one-eighth inch tubing is 5 ft; although longer tubing has been used when trying to achieve really low rates.

Color-coded tubing is available which can be a big help when adjusting flow rates. Yellow tubing has the thickest walls and smallest inside diameter of one-sixteenth inch. Black tubing is available in one-eighth inch inside diameter. These tubes all fit the same size connector, making it easy to switch from one flow capacity to another. Select the tube needed for the desired flow capacity, then once installed, adjust the flow regulator valve for the required flow rate on the flow meter.

A second way to decrease flow and increase backpressure is to use orifice plates (Teejet flow regulators) in the tubing at the top of the gas knife fitting. To use these plates, you have to know what flow rate you need in each tube. Since the flow rates of orifice plates are based on water, you have to do some mathematical conversions to methyl bromide or choose one on the high side and try it. You do not want a plate, which gives you the exact same flow rate as what you need; you want one with a slightly higher flow rate so that clogging potential is lowered.

The plates have numbers stamped on them that indicates the size of the hole in the plate. Keep a supply of various sizes on hand. Orifice plates work over a more narrow range of rates than tubing because the restriction in flow occurs at one point rather than over a length of tubing.

One system that has given good results is commercially available (manufactured by Mirruso Enterprises Inc., and available through Chemical Containers Inc.) and provides an easily installed, simple modification. It consists of a flow divider with a small sight glass for each knife, a 0 to 30 psi pressure gauge and small diameter poly tubing. The sight glasses are equipped with standard quick connect (insert friction connectors) couplings on top so the poly tube can be connected and disconnected easily. Similar couplings are located on the top of the gas knives.

Sight glasses allow you to monitor flow and detect plugging of chisels or lines. Plugging can be a significant issue with low rates of fumigant; thus, fumigant filtration is important and filters must be checked periodically and maintained free of trash to assure consistent flow.

When using reduced rates of fumigant: the flow rate has been greatly diminished so accuracy and uniformity of delivery are critical. A common observation on commercial farms is tractor movement as soon as the fumigant flow valve is opened. There is a much longer delay in supplying all the knives uniformly when the rate is reduced, so tractor movement should not begin until all lines are fully charged. This problem can easily be overcome by observing the sight gauges and back pressure gauge.

Once the backpressure stabilizes, fumigation can begin. Addition of an inline check valve at the top of each gas knife can be beneficial because it diminishes loss of fumigant out of the line to the knife. By keeping the line full all the way to the gas knife, there are fewer delays in fumigant delivery and less time wasted purging air from lines. This would be especially important for those growers who use radar controlled fumigant delivery systems.

Rate reduction with methyl bromide works when combined with a highly retentive mulch film like VIF or metalized film. In addition to the use of the right film, success requires close monitoring, assuring not only the correct rate, but also uniform delivery to all three knives in the bed. Non-uniformity guarantees poor fumigant performance at any rate, but with reduced rates of methyl bromide, the results can be even more dramatic.
The simple modifications described can greatly improve uniformity of delivery and performance. These modifications are relatively inexpensive and are readily available as a package. Before trying rate reductions growers should modify their fumigation equipment to allow better control over uniformity of flow. This can mean the difference between success and failure.

Excerpted from an article by James P. Gilreath, Bielinksi Santos and Phyllis R. Gilreath Citrus and Vegetable Magazine, August 2005

Florida Minimum Wage

The minimum wage will change for the State of Florida on January 1st! Florida's minimum wage will go to $6.67 an hour on January 1, 2007, a 27 cent an hour increase to match inflation as required by an initiative passed by the legislature. Please remember to check that your payroll programs are correctly calculating the new minimum wage and that you have changed your Worker Information - Terms and Conditions of Employment forms (WH-516) to show the new minimum wage of $6.67.

The Agency for Workforce Innovation has created a new poster that must be displayed after January 1st informing the workers of the new Florida minimum wage.

Please also remember that the Fair Labor Standards Act (FLSA) poster with the **$5.15** minimum wage **STILL** needs to be posted - and the rate not altered! This is a Federal rule - even though Florida's minimum wage is higher than the Federal law the FLSA poster must still be displayed. This is also a good time to review your "broken-arm" posters to make sure your dates of coverage on the labels are still valid.

New Sticker Requirements for Farm Labor Vehicles

This coming year new stickers will be required for Farm Labor vehicles that transport agricultural workers. The vehicles must have the new sticker on the left rear bumper or body by January 31, 2007.

The stickers are issued for specific vehicles so if you have more than one van or bus make sure the sticker matches the vehicle you put it on. If you lose it or it gets stolen you must ask for a replacement by writing a note explaining the circumstances of why you need a replacement sticker and for which specific vehicle.

It is recommended that you make a copy of the sticker before you apply it to the vehicle and then keep that copy with your tag registration.

Info from Wes Wurth, CHAPP Inc

Freeze Outlook for This Winter

The Southeast Climate Consortium has released an updated analysis of the risk of severe freezes in Florida during this winter. Being an El Niño year, that risk should be reduced. El Niño typically sets up a jet stream pattern with a strong subtropical jet flowing across the southern U.S. The position of this subtropical jet tends to "block" the intrusions of artic air masses that are needed for the severe freeze events. Keep in mind that severe freezes are unique weather events, and there's always a chance that they could occur in any phase of the Pacific Ocean.
Click on the link below to go directly to the page where you can check the probability of the temperature in your county reaching: 32F or less, 28F or less, 25F or less, 22F or less, and 20F or less, during this winter. There is also information there on the probability of dates of first and last freezes. If clicking on the link does not work, just copy and paste it into the URL box.
http://www.agclimate.org/Development/apps/agClimate/controller/perl/agClimate.pl?function=climforecast/freeze.html&location=local&type=html&primary=2&major=1&sub=8

You can also visit http://www.agclimate.org for other climate information.

AMVAC Acquires Permethrin Line from Syngenta

On December 19, 2006, American Vanguard Corporation's wholly owned subsidiary, AMVAC Chemical Corporation, completed the acquisition of certain assets comprising the product line Permethrin (a synthetic pyrethroid insecticide) from Syngenta Crop Protection, Inc. In connection with the transaction, AMVAC acquired both crop and non-crop uses of the product line in the U.S., Mexico and Canada. Acquired assets include registration rights, manufacturing and formulation know-how, inventories, customer lists and the trademarks Ambush® and Prelude® in the aforementioned territories.

In July 2002, AMVAC acquired from Syngenta certain assets associated with the Ambush 25WP (wettable powder formulation) insecticide business in the U.S., and now owns the complete permethrin product line. This product line sells into an estimated $40 million market and can be used on essentially all fruit and vegetable crops to control a broad spectrum of insect pests.

AMVAC will begin selling the Permethrin products immediately. The Company will be re-launching the liquid formulation of Ambush, which has one of the broadest lists of crops on its label, in the U.S. and Canada, as Syngenta has not sold it into those marketplaces for the past four years. In Mexico, AMVAC will distribute Ambush through national distributors. Sales of Prelude, which is sold for general pest control in or around the home, have been ongoing in both the U.S. and Canada and will continue with existing distributors.

Tomato Plant Burn Down Rule

CHAPTER 5B-59 PLANT PEST CONTROL

5B-59.001 Plant Pest Control.

5B-59.002 Standards for Determining when to Cease Use of a Pesticide During an Emergency Response to a Plant Pest Infestation Which Involves the Aerial Application of a Pesticide to an Urbanized Area.

5B-59.003 Tomato Plant Destruction.

(1) Definitions. For the purpose of this rule, the definitions in Sections 1.01, 500.03, 570.02, 677.102, and 581.011, Florida Statutes, and the following definitions shall apply:

(a) Commercial Tomato Producer. A person who is engaged in and has an economic risk in the business of producing, or causing to be produced, tomatoes for market.
(b) Final harvest. When an active pest management system is no longer maintained in the field following tomato harvest or if harvest has not occurred or not intended and no pest management system is being maintained.

(2) Tomato Plant Destruction. Within five days following the final harvest of a tomato crop, commercial tomato producers shall destroy remaining tomato plants on the production site using a chemical burn-down with a contact desiccant type herbicide that
is EPA labeled and approved for this use such as paraquat or diquat that also contains a minimum three percent oil and a nonionic adjuvant to destroy crop vegetation. This must be followed by immediate complete destruction by crop removal unless double cropping is planned.

(3) The commercial tomato producer failing to destroy tomato plants within five days following final harvest as described in (2) shall be issued an immediate final order. An immediate final order issued by the department pursuant to this section shall notify the property owner that the tomato plants that are the subject of the immediate final order must be removed and destroyed unless the commercial tomato producer, no later than 10 days after delivery of the immediate final order requests and obtains a stay of the immediate final order from the district court of appeal with jurisdiction to review such requests. The commercial tomato producer shall not be required to seek a stay of the immediate final order by the department prior to seeking the stay from the district court of appeal. If the commercial tomato producer refuses or neglects to comply with the terms of the notice within 10 days after receiving it, the director or her or his authorized representative may, under authority of the department, proceed to destroy the tomato plants. The expense of the destruction shall be assessed, collected, and enforced against the commercial tomato producer by the department.

The rule can also be seen at http://manatee.ifas.ufl.edu/Vegetables/TomatoBurnDownRule.pdf

Grower's IPM Guide for Florida Tomato and Pepper Production – The UF/IFAS IPM Florida office has been assembling an IPM decision-making resource for Florida's pepper and tomato industry. This guide will serve as an interdisciplinary, comprehensive resource to assist growers in the adoption of IPM tactics as means to reduce the risk of epidemics, conserve chemistries against resistance and reduce overall production costs.

The Grower's IPM Guide is a work in progress and suggestions and comments are welcome. The guide can be seen on line at http://ipm.ifas.ufl.edu/agricultural/vegetables/tomato/T&PGuide.htm. When completed it will be published and will be available for purchase.

Up Coming Meetings

Palm Beach County

January 8, 2007 **Pesticide Applicator Testing**

Clayton Hutchinson Ag Center
559 N Military Trail
West Palm Beach, Florida

General Standards/Core Training (4 CEUs) 8:00 am - 12:00 PM
Ornamental and Turf Test Review (2 CEUs) 1:00 pm - 3:00 PM

Contact 561-233-1700 – select option, 1 then option 3

January 10, 2007 **Pesticide Applicator Testing**

Belle Glade Extension Office
2976 State Road 15
Belle Glade, Florida

General Standards/Core Training (4 CEUs) 8:00 am - 12:00 PM
Private Applicator Test Review (2 CEUs) 1:00 pm - 3:00 PM

Contact 561-996-1655

Other Meetings

March 6-9, 2007 **2007 MSU Greenhouse Tomato Short Course**

Eagle Ridge Conference Center
Raymond, Mississippi.

For more information, see the web site http://www.greenhousetomatosc.com or contact

Dr. Richard G. Snyder,
Mississippi State University
(601) 892-3731
Email: RickS@ra.msstate.edu

Websites

Late Blight Information Center – Dr Pam Roberts, Plant pathologist at UF/IFAS Southwest Florida Research and Education Center has launched a website that pulls together current information on late blight from various sources and which will help keep growers appraised of the late blight situation in Florida. Go to **http://swfrec.ifas.ufl.edu/plant/late_blight/**

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Quotable Quotes

No one is useless in this world who lightens the burdens of another. – Charles Dickens

Reflect on your present blessings, of which every man has many; not on your past misfortunes, of which all men have some. – Charles Dickens

We need never be ashamed of our tears. – Charles Dickens

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to heaven, we were all doing direct the other way - in short, the period was so far like the present period… – Charles Dickens

On the Lighter Side

Let Me come in - By Richard Bugg

Two nights before Christmas I sat on my bed,
And more than just sugar plums danced in my head.

Our savings depleted; my job quite unstable;
My wife wanting clothes and a new kitchen table.

The kids were all fighting about who was first
On Santa's long list. My head nearly burst.

"Is Santa a Fake?" the ten-year-old cried.
"Cause I'd hate to think that dear Daddy has lied."

"Of course Santa's real," answered mother with glee.
“When Christmas day comes, just look under the tree.”

"Oh, Good!" the kids cried. "'Cause St. Nick at the mall
Said he'd bring not just some of our list -- but all!"

My head started pounding; my temples were throbbing.
Then I heard the faint sound of my three-year-old sobbing.

"Oh, Daddy, oh, Daddy! How will Santa Clause guess
That me and my doll need the same pink silk dress?"

I turned to my wife -- a long pleading look.
She put on their jammies, while I found their book.

I read them a story then tucked them in bed
With posters of Mickey and Simba o'erhead.

While Mama in her nightshirt and I in my skivvies
Collapsed on the bed and turned on the TV.

The news was all bad -- the economy down.
The grimace on my face now distinctly a frown.

I shut the thing off and turned out the light.
With my wife on the left I rolled to the right.

A grunting of sorts was my tender goodnight.
Then I screwed shut my eyes to chase cares from sight.

Two minutes? Two hours? I couldn't be sure.
When I heard a noise that made my blood stir.

I ran to the window, threw open the drape.
Well, I saw a sight that made my mouth gape.

The moon on the breast of the five-day old slush
Made the yard as appealing as six-day old mush.

When what to my dull aching eyes should appear
But a miniature sleigh and eight tiny reindeer.

Yes, Santa was there, but him I expected.
The shock came when all of the rest I detected.

The Cratchits, with Scrooge, and young Tiny Tim.
King Arthur and Merlin, plus Old Madam Mim.

The Whos all from Whoville, the Grinch and ol' Max.
Young Dr. Doolittle there with his Yaks.

The muppets there doing their whole Christmas thing.
While Alvin and Chipmunks started to sing.

And Jack with his beanstalk just starting to grow.
The poor little match girl asleep in the snow.

Frosty was singing and Rudolph was glowing,
The drummer boy drumming. And I had trouble knowing

Just what I should do. If I had a choice
I'd go back to bed. But I heard a voice.

"Let me in," the voice said. What an odd piercing line.
I immediately looked for a wolf and three swine.

Not the voice of a wolf though, I knew from the start.
But a voice that could best be heard in the heart.

"Let me in," came again, and the crowd seemed to hear
And turned to a manger that lay at the rear

Of my untidy lawn. How embarrassed was I
That the sod was unfinished. I started to cry.

But not for the lack of good grass nor from shame,
But because that sweet voice had called me by name.

The Cratchits, Miss Piggy, the whole motley scene
All fell to their knees in a manner serene.

The girl in the snow awoke from her dream
And lit her last match as a lamp for her King.

I ventured to walk down the stairs and go out.
As I walked through the crowd I started to shout

"Oh, help me, please help me. I have bills to pay.
My job is in trouble and I've lost my way."

"We've too many mouths to feed and to dress.
I'm just a failure, a wash-out, I guess."

I said what I felt. I said it out loud.
And I looked for support from the odd-looking crowd.

But their faces were filled with contentment, not thought.
They had not the depth for the comfort I sought.

Nostalgia, some laughs, and some heart-warming plots,
All the magic of childhood -- of this there was lots

In my friends just behind me. But they don't possess
The power of true love; the power to bless.

My friends faded then -- fairy tales all.
But the Lord of All Hosts was still at my call.

I fell to my knees, folded hands at my chin.
I heard the voice say, "Please, let me come in."

I awoke in my bed and turned to my wife.
Her snoring repose took away all my strife.

The day of all days, Christmas Eve came.
We sat round the fire and called them by name,

"On Dasher, On Dancer, On Prancer and Vixen."
We sang Jingle bells. The kids got their licks in.

The Grinch carved his Beast. Tiny Tim God-Blessed all.
Then we looked at the painting I'd hung on the wall.

I opened to Luke. We read of His birth.
We read of His life, and His works here on earth.

We read of our Lord, of our Savior, my friend,
Then prayed to the Father and asked that he send

All the spirit of Christmas; the Spirit of Love;
All the blessings befitting us, down from above.

Christmas day came, and Santa Claus too.
And our own little Whos never cried Boo-hoo.

In fact, though their list had been shortened a tad
They whispered together and then asked me, "Dad,

"Is there someone out there, some girl or some boy,
Whom we could help out with a game or a toy?"

I did lose my job, then along came a better.
And we paid all our bills to the dot and the letter.

Our home now abounds not with money, nor fame,
But with unfettered love for the Holy of Name.

I remember the stress and the fear that has been,
But my soul now rejoices, 'cause I let him in.

Contributors include**:** Joel Allingham/AgriCare, Inc, Karen Armbrester/SWFREC, Kathy Smith/Agricultural Pest Management, Bruce Corbitt/West Coast Tomato Growers, Dr. Kent Cushman/SWFREC, Dr. Phyllis Gilreath/Manatee County Extension, Michael Hare/Drip Tape Solutions, Fred Heald/Farmers Supply, Sarah Hornsby/AgCropCon, Cecil Howell/Taylor &Fulton, Loren Horsman/Glades Crop Care, Keith Jackson/SWFREC, Bruce Johnson/General Crop Management, Dr. Mary Lamberts/Miami-Dade County Extension, Leon Lucas/Glades Crop Care, Bob Mathews, Glades Crop Care, Mark Mossler/UF/IFAS Pesticide Information Office, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Jimmy Morales/Pro Source One, Chuck Obern/C&B Farm, Teresa Olczyk/ Miami-Dade County Extension, Dr. Aaron Palmateer/TREC, Darrin Parmenter/Palm Beach County Extension, Dr. Ken Pernezny/EREC, Dr. Pam Roberts/SWFREC, Dr. Nancy Roe/Farming Systems Research, Wes Roan/6 L's, Kevin Seitzinger/Gargiulo, Jay Shivler/ C&B Farm, Ken Shuler/Stephen's Produce, Ed Skvarch/St Lucie County Extension, John Stanford/Thomas Produce, Mike Stanford/MED Farms, Dr. Phil Stansly/SWFREC, Eugene Tolar/Bright Star Farms, Mark Verbeck/GulfCoast Ag, and Alicia Whidden/Hillsborough County Extension.

The **South Florida Pest and Disease Hotline** is compiled by **Gene McAvoy** and is issued on a biweekly basis by the **Hendry County Cooperative Extension Office** as a service to the vegetable industry.

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