The weather has been a real mixed bag across southern Florida growing areas over the past two weeks. A couple of cold fronts, the most recent which dropped down over the southern peninsula over the past two days finally dropped temperatures from record highs in the 90’s in many areas to more seasonable levels in the mid 70’s during the day and mid to low 50’s at night. The FAWN Weather Station in Fort Lauderdale recorded nearly an inch and a half of rain while most other areas got only between 0.1 – 0.2 inches for the period.

Planting of a wide variety of crops continues in all areas. Workers are busy with a number of cultural activities including pruning, staking and tying and spraying. Potato planting has started in the Immokalee area but reports indicate that heat is delaying emergence and causing problems with seed pieces rotting in warm wet soils. Respondents continue to indicate that unseasonable hot weather throughout the growing season has been rough on a wide range of crops affecting everything from pollination to reduced quality and shelf life.

Increasing supplies of beans, cucumbers, eggplants, peppers, radishes squash, sweet corn, tomatoes and specialty crops are beginning to come onto the market from various South Florida locations. Quality is good although higher than normal grade-out of heat related defects and post–harvest disorders are being reported.

FAWN Weather Summary

<table>
<thead>
<tr>
<th>Date</th>
<th>Air Temp (°F)</th>
<th>Rainfall (Inches)</th>
<th>Hours Below Certain Temperature (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ft Lauderdale</td>
<td>10/30 – 11/14/02</td>
<td>59.6 - 92.7</td>
<td>1.44</td>
</tr>
<tr>
<td>Fort Pierce</td>
<td>10/30 – 11/14/02</td>
<td>53.3 - 89.7</td>
<td>0.09</td>
</tr>
<tr>
<td>Homestead</td>
<td>10/30 – 11/14/02</td>
<td>51.7 - 90.2</td>
<td>0.23</td>
</tr>
<tr>
<td>Immokalee</td>
<td>10/30 – 11/14/02</td>
<td>51.7 - 90.2</td>
<td>0.23</td>
</tr>
</tbody>
</table>
The short term forecast from the National Weather Service in Miami calls for another cold front drops down over south Florida by Sunday. Unsettled weather ahead of this front will bring an increased chance of rain on Saturday and Saturday night with possibly locally heavy showers dumping up to two inches of rain in some areas. Temperatures will fall dramatically behind the front with lows possibly dipping into the low 40’s in interior parts of Hendry, Glades and Collier Counties by Monday morning. Temperatures will remain below normal with some gradual warming by Wednesday to Thursday.

Weather service meteorologist Jim Lushine cautions that we are moving into an El Niño year, when a warming of the eastern Pacific Ocean pushes the jet stream's fast-moving air currents farther south, creating atmospheric anarchy. This winter, growers can expect more rain, violent thunderstorms and maybe some tornadoes with winds up to 150 miles an hour. In 1998, tornadoes driven by El Niño killed 39 people and injured hundreds more in the Orlando area.

For additional information, visit the National Weather Service in Miami website at http://www.srh.noaa.gov.mia

Insects

Worms

Reports indicate that worm pressure around southwest Florida has been falling off over the past few weeks although there are a few scattered reports of continued heavy pressure. Depending on the crop and location, respondents note finding southern armyworm, beet armyworm, tomato fruit worm, loopers, hornworms, and leaf-tiers.

Growers and scouts in Palm Beach County are also reporting decreased worm pressure. Reports indicate low armyworm pressure in most crops with low to moderate populations of southern armyworms and loopers in showing up in beans.

Reports from Homestead indicate that worm pressure is increasing on a number of crops including corn, beans, eggplant, and tomato with southern armyworms, beet armyworms, fruit worms, loopers, and horn worms all being seen. Experienced scouts indicate this is possibly one of the worst worm seasons in recent memory.

Fall armyworms are widely present in sweet corn from Clewiston to Homestead.

Melonworms are widely present in cucumbers and squash throughout the area. A few pickleworms have been noted in cucumber blossoms.

Leafminers

Reports out of Homestead indicate leafminer populations are continuing to build up in a number of crops including beans, eggplant and tomato and growers are starting to implement control strategies. Scouts indicate that populations are particularly high in some older bean fields and expect that these will begin to move into other crops as harvesting begins over the next week or two.

Around Palm Beach, leafminers numbers in eggplant and tomatoes have reached threshold levels in a several places and growers are beginning to spray. Reports indicate good control on tomato where Platinum had been applied.

Leafminer populations are increasing around southwest Florida although scouts indicate that parasites are active.
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 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 or American sepentine leafminer. 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 leaf mining 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.

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) 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 and insecticidal oils. Both products 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 the pest.

For more information on leafminers, check out the UF/IFAS Featured Creatures website at http://creatures.ifas.ufl.edu/.
**Aphids**

Respondents in the Homestead area report finding aphids on cucurbits and tomatoes. Growers are beginning to report mosaic virus in fields where aphids are active.

Growers and scouts on the east coast report that aphids that had been active a few weeks ago have virtually disappeared.

In southwest Florida, there have been scattered reports of aphids appearing in squash.

**Pepper Weevil**

Respondents from Homestead report that pepper weevils are present in force. Weevils have also been reported feeding on eggplant blooms as well.

Scouts in Palm Beach County note that they have started to see low levels of weevils in pepper but that in general controls are adequate.

Around southwest Florida, pepper weevils are starting to be detected in pepper fields in a number of locations.

The adult pepper weevil *Anthonomus eugenii* is a small (1/6 inch) black or gray beetle with a long snout (proboscis) and elbowed antennae. Adults use the mandibles at the end of the proboscis to feed on leaf or flower buds. Females also use the mandibles to bore a small hole in developing fruit or flower buds. The hole is plugged with fecal matter (frass) after an egg is deposited. A tiny legless grub hatches from the egg and eats its way toward the seed core of the fruit where it feeds on seeds and pulp, passing through larval growth stages or instars. Damaged fruit become contaminated by insect parts, frass and rotted tissue, and will eventually fall from the plant. Pupation takes place inside the fruit within a small cell created by larval feeding. The emerging adult may feed within the fruit for a while before escaping through a circular hole chewed in the wall of the fruit.

Black nightshade may serve as a secondary host to maintain small numbers of pepper weevil during fallow periods. Since development times decrease as temperature increases and since adults will migrate readily from old fields to new plantings, populations generally build up during the season so that populations are greatest in later spring plantings.

Since adults tend to move to lower, more protected and less visible plant parts as temperatures increase, scouting efforts should concentrate on a search for adults in leaf whorls, flowers and fruit during morning hours. Commercially available pheromone traps may also aid in early detection. Fruit and flower buds should be examined for damage and fallen fruit and buds examined for presence of larvae. Infested fruits can be recognized before they fall by the yellow calyx the presence of oviposition punctures that look like small dimples. Hot peppers like Jalapenos and Serranos are often the first peppers to be affected. Fruit and flower buds should be examined for damage and fallen fruit and buds examined for presence of larvae. If possible, all damaged and fallen fruit should be removed and destroyed.

Chemical control is difficult because all stages but the adult are protected within the fruit, so that only the adult weevil is vulnerable to insecticides. Frequent sprays may be necessary starting in the initial stages of infestation in order to avoid unacceptable levels of damage.

Spraying needs to commence at the first sign of weevils or with flowering in fields with a history of problems. Vydate has been the standard control and has given pretty good results even at 2 pts/acre when
sprayed weekly in Dr. Phil Stansly’s trials at the Southwest Florida Research and Education Center. A total of 24 pts can be applied for the season.

A number of growers have indicated obtaining good results in controlling weevils with either Capture - bifenthrin or cryolite. Actara – thiomethoxam has demonstrated superior efficacy in trials conducted by Phil Stansly. Applications are limited to two per season.

Other materials that have been used with some success by growers include Neemix and fish oil both of which seem to be most effective when used preventatively before weevils become established. Some growers who have applied Admire – imidicloprid on pepper indicate that there may be some activity on weevils and report that Admire has delayed infestations and possibly reduced the overall level of pepper weevil infestation. Many of the currently labeled materials are difficult to work into an IPM program once plantings begin to be harvested due to the 7 day PHI in force for all of them. This is particularly true for hot peppers, which are often harvested multiple times during the course of a week.

In addition to chemical controls, a complete IPM approach is recommended for pepper weevil management. Adjacent or nearby sequential plantings should be avoided. Sanitation is important. Crops should be deep-plowed immediately following harvest and after treating with insecticide to reduce adult movement into nearby fields and to reduce survival over the summer. Nightshade in and around fields should be controlled to reduce population survival between crops.

The UF/IFAS Featured Creatures website has recently added a profile on the pepper weevil which can be found at [http://creatures.ifas.ufl.edu/veg/beetle/pepper_weevil.htm](http://creatures.ifas.ufl.edu/veg/beetle/pepper_weevil.htm).

Mites

Reports from Immokalee indicate that broadmites continue to be a sporadic problem in pepper and eggplant but appear to be under control in most locations. Broadmites are also being detected in basil.

Growers and scouts in Homestead also report the occurrence of broad mites on eggplant and pepper. Spider mites are also reported to be causing problems on eggplants.

Respondents in Palm Beach indicate that broad mites appear to be building back up in some older pepper fields.

Whiteflies

Around southwest Florida, whiteflies are beginning to increase especially in older tomato fields where nymphs and adults are being seen. Whiteflies are also being reported on pepper and have reached high levels in a few squash fields where no nicotinoid was applied at planting. Silverleaf symptoms have been noted in several of these locations.

Respondents from Palm Beach note an increase in whitefly populations in older tomato fields where growers are reported to be applying a variety of controls including Knack and Courier as the effect of soil applied nicotinoids wear off.

Scouts in Homestead are noting an increase in whitefly numbers in tomato and squash. Whiteflies are also present in beans in some locations. Silverleaf is being observed in heavily infested squash.

Growers are advised to monitor whitefly populations and maintain control of in-field populations as soil applied nicotinoids wear off, preferably with IGRs, in order to reduce carryover to the next crop.
**Thrips**

Growers and scouts around in Palm Beach and in southwest Florida are reporting finding a few Florida flower thrips (*Frankliniella bispinosa*) in pepper and tomato.

**Melon thrips** (*Thrips palmi*) are widely present in Homestead and are causing problems in eggplant and pepper. Scouts are reporting heavy *Thrips palmi* infestations in some bean fields.

**The melon thrips occurs throughout the tropics, as well as in the subtropical region of Florida.** Although it has been more of a problem in Homestead, than in other south Florida growing areas, its distribution in other parts of the world suggests that the entire "Sun Belt" of the United States may eventually become infested.

**The melon thrips infests a wide variety of crops.** Vegetables such as cucurbits, legumes and solanaceous crops are preferred. Although peppers and eggplants can support massive numbers, populations do not establish on tomatoes. Melon thrips will infest many species of weeds including composites, legumes and nightshades among others.

**Melon thrips tend to utilize more of the host plant than other species that occur primarily in the blooms.** In crops, such as snap beans and the vine crops, feeding on the foliage causes most damage. Foliar feeding often begins inside the tightly rolled leaves at the growing points of the plant. Larvae and adults soon appear on the undersides of the expanding leaves. The combined effect of feeding damage in the growing point and on young leaves can severely stunt and distort sensitive crops, such as peppers.

**In peppers and eggplants, Thrips palmi affects both fruit and foliage.** The greatest damage occurs when thrips become established in the blooms, and lay eggs around the calyx. Thrips feeding under the calyx of the expanding fruit cause the characteristic scars, which may affect a sizable part of the fruit wall.

**Careful planning is required in schedules plantings of sensitive crops.** *Thrips palmi* can move into new parts of a farm when infested fields are destroyed. This can be critical in areas with long growing seasons, where new plantings are adjacent to older fields. The same is true in areas where the foliage of infested crops, such as snapbeans, is removed during mechanical harvesting.

**Infestation levels in young crops must be monitored carefully.** Awareness of the general level of melon thrips infestation, not only in your fields, but in neighboring farms as well is especially important. Crop scouting can be intensified around the time of critical crop events, allowing early detection and treatment of immigrants from nearby farms. Information excerpted from the Glades Crop Care Thrips Database website at [http://www.gladescropcare.com/tech-thrips.html](http://www.gladescropcare.com/tech-thrips.html).

For a further discussion of this pest, check out the UF/IFAS Featured Creatures profile at [http://creatures.ifas.ufl.edu/veg/melon_thrips.htm](http://creatures.ifas.ufl.edu/veg/melon_thrips.htm).

**Diseases**

**Choanephora blight**

The outbreak of Choanephora blight that has been affecting crops across south Florida is apparently being to slow down in many areas probably as much in response to cooler drier conditions as anything. Growers and scouts indicate that it is still widely present on beans and are reporting scattered occurrence on a number of other crops including, peeper, squash and snow peas.
A number of growers are reporting good results using Botran at the 2-pound rate but note that it can burn foliage.

Young lesions on bean leaves appear grayish and limp or wilted as if scalded with hot water. As symptoms progress the lesions appear water-soaked and margins and leaf tips blighted. Dark-gray fungal growth is apparent on some lesions. Under magnification, a silvery, spine-like fungus with a dark head is seen.

Older lesions are necrotic and often tan in color and dried out. Symptoms may be confused with Phytophthora blight (*Phytophthora capsici*) when young or spray burn on bean plants with older symptoms. In pepper infections often begin in spent blooms and progress onto branches causing the tips to dieback.

Photos of the disease on beans and pepper have been posted on the web at the Florida Pest Alert WWW site at [http://extlab7.entnem.ufl.edu/PestAlert/](http://extlab7.entnem.ufl.edu/PestAlert/).

**Bacterial Spot**

Around southwest Florida, bacterial spot is still spreading in a number of locations and in creeping higher into the canopy. In general, bacterial spot is much more widespread on tomato than on pepper and plum type tomatoes have higher incidence of infection than do rounds. Incidence and severity ranges widely from low to moderate. Some of these older tomato fields have lesions on fruit and first pick will have some rough fruit.

On the east Coast, reports indicate that bacterial leaf spot is widespread in tomato. Incidence and severity remain low to moderate.

Reports from Homestead indicate high incidence and occurrence of bacterial spot in susceptible varieties. Severity varies from low to moderate.

**Target spot and early blight**

Growers and scouts on both coasts have noted a noticeable increase in the occurrence of alternaria (early blight) and target spot creeping higher into the canopy in older tomato. There have also been reports of target spot appearing on harvested fruit.

Foliar symptoms of this disease are often difficult to distinguish from bacterial spot with out lab diagnosis. Initially small water soaked lesions appear on the upper leaf surface. The lesions develop gradually increasing in size becoming round and pale brown with conspicuous yellow halos. Petiole and stem lesions are brown and oblong and may girdle and kill individual leaflets.

The fruit lesions are quite distinct. They first appear as dark pinpoint brown spots, which may enlarge and develop into sunken lesions with pale brown centers that often crack open. Fruit lesions may be found anywhere on tomato fruit but are most often concentrated on the shoulders.

Target spot is a polycyclic disease that develops rapidly under cool damp conditions. Optimum conditions for disease development include temperatures of 68° to 82° F and long periods of high moisture. The heavy night dews and foggy mornings often experienced in the fall in conjunction with tomato canopy closure are optimal for the development of this disease. Spray programs based on copper and manzate aimed at bacterial spot are ineffective in controlling target spot, chlorothalonil based compounds are recommended for control and should be rotated into a tomato disease control.
**Phythophthora**

Scouts in Palm Beach are continuing to report widely scattered cases of *Phythophthora capsici* on pepper.

Around southwest Florida, Phytophthora blight has been reported on pepper in a few widely scattered locations. Incidence is low and occurrence spotty.

**Tomato spotted wilt virus**

Growers and scouts in southwest Florida and Palm Beach County have reported finding tomato spotted wilt virus in pepper. In at least one case, the UF/IFAS Plant Disease Clinic, in Immokalee, has positively diagnosed the disease. In most cases, incidence is low and only isolated plants are affected.

*Early symptoms of spotted wilt on tomato are difficult to diagnose.* Young, infected plants show an inward cupping of leaves, and the foliage may appear off-color or have a slight bronze cast. Small dark-colored lesions appear on the middle or lower leaves or on other green parts of the plant. As the disease progresses, the leaves turn brown and droop downward, giving the plant a wilted appearance. This is often accompanied by dieback of tips of terminal branches and a distinctive purplish streaking of stems and petioles. One half of the plant may be more affected than the other half. The entire plant is usually dwarfed.

*Tomato spotted wilt has become one of the most severe disease problems facing tomato growers in north Florida.* It is a destructive disease causing yield losses that typically range from 20 to 40% and may reach 100%.

The virus is transmitted from plant to plant primarily by several species of thrips, including the western flower thrips (*Frankliniella occidentalis*), the onion thrips, (*Thrips tabaci*).

Infection seems linked to transplants coming from transplant houses in Georgia where the disease is endemic and affects a variety of crops. To date, no secondary spread has been noted in south Florida – due to the absence of an effective insect vector.

**Tomato Yellow Leaf Curl Virus**

Growers and scouts on both coasts report finding a very low percentage of Tomato Yellow Leaf Curl infected tomatoes. In most instances infected plants are still few and far between although several reports are beginning to note the occurrence of secondary spread from initial infections. The incidence of infection remains mostly below 1% although there have been a few scattered reports of fields in the 2-3% range.

**Southern Blight**

Reports of southern blight continue to come in from scattered areas around southwest Florida as well as Palm Beach County. Incidence has reached one percent or more in some fields.

Tomato plants with southern blight (*Sclerotium rolfsii*) display lesions on the stem at or near the soil line. These lesions develop rapidly during warm wet weather, girdling the stem and resulting in a sudden and permanent wilting of the plant. White mats of mycelia are produced on the stem and in the adjacent soil. In a few days, tiny tan to brown spherical sclerotia about 0.06 inches in diameter appears on the mycelial mat. The presence of abundant sclerotia is a good diagnostic feature.
**Downy Mildew**

Downy mildew is widely present on cucurbits including squash and cantaloupe from widely scattered locations across south Florida. Fungicides that are effective include, chlorothalonil (Bravo types), mancozeb (Dithane, Manex II, Manzate, Penncozeb), Ridomil Bravo, Ridomil MZ 68, or Quadris. Do not use Quadris in repeated sprays. It should be rotated with other fungicides for resistance management purposes. Because downy mildew increases over time at a rapid rate, spraying twice per week may necessary if the grower intends to hold the crop for later harvests. The downy mildew fungus, *Psuedoperonospora cubensis*, can complete its life cycle in three to four days. This is the disease some of the old-timers called wildfire because it spreads quickly. It is not a very forgiving disease.

**Powdery Mildew**

Respondents across south Florida note that powdery mildew is active on a range of cucurbits including squash and cucumbers. Strobulurin fungicides like Quadris and Nova are said to be providing good control.

**Gummy Stem Blight**

Gummy stem blight is widely present at low levels on cucurbits around Immokalee.

Dr Tom Kucharek UF/IFAS Plant Pathologist has passed on the following caution to growers. Cabrio 2.08 FL, Headline 2.08 FL, Quadris 2.08 FL, Nova and Abound 2.08 FL are in the strobilurin group of fungicides and they all have the same specific mode of action.

Resistance to this chemistry is present in some pathogens including gummy stem blight. Many isolates from Florida of Didymella bryoniae, the causal agent of gummy stem blight, are no longer sensitive to Quadris 2.08 FL. Thus, rotation of Quadris with Cabrio in a spray program should not be relied on for resistance management. Syngenta, the manufacturer of Quadris and Abound, and BASF, the manufacturer of Cabrio and Headline, will clearly state this situation on their future labels and are in the throws of informing users of these products about the close relatedness of these products.

**Mosaic**

Growers and scouts across south Florida are beginning to report finding low levels of virus in squash.

Scouts in Homestead report low levels of maydis and maize dwarf mosaic virus on sweet corn.

**Tomato little leaf**

Several fields around Immokalee have been showing symptoms of tomato little leaf. Incidence and occurrence ranges from low to severe with at least one 40-acre field nearly 100 percent affected.

**Tomato little leaf is a non-parasitic disease of tomatoes that causes virus-like symptoms in tomato.** Symptoms of this condition are characterized by unusual growth consisting of interveinal chlorosis in young leaves. Subsequent growth becomes severely distorted with leaflets along the mid-rib failing to expand properly resulting in a “little leaf” appearance. In addition, leaflets are twisted and distorted. Overall the appearance is reminiscent of viral or phenoxy herbicide symptoms.

It occurs on wet soils and is apparently caused by the release of amino acid analogs by soil microorganisms under wet conditions. It is important to note that symptoms often begin to appear as
waterlogged soils begin to dry out. These compounds are taken up by plant causing the expression of virus-like symptoms.

**Control consists largely of managing soil moisture to avoid water logging.** Maintaining soil pH below 6.3 or less can also reduce development of the problem. Affected plants generally resume normal growth once soil moisture levels become more favorable.

**Post-Harvest Disorders**

Growers and pack house operators around south Florida are reporting a higher than normal level of post harvest problems in tomatoes and other crops. Many of these problems are undoubtedly related to hot wet conditions during the growing season.

Post harvest diseases can be caused by a variety of bacterial and fungal pathogens. These include bacterial soft rot (Erwinia carotovora subsp. carotovora) and other bacteria such as Pseudomonas, Xanthomonas and Bacillus sp. Fungal pathogens include sour-rot (Geotrichum candidum), Rhizopus stolonifer, target spot (Corynespora cassiicola), Phytophthora sp., Alternaria sp. and others.

Effective water sanitation is one of the most important means of combating these problems. Maintenance of 100 ppm to 150-ppm free (also known as available or active, not to be confused with "total") chlorine at a neutral pH (~6.5 to 7.5) is the recommended treatment of dump tanks, flumes, and washers.

As tomatoes are introduced into the dump-tank, leaves and soil also enter the water. Free chlorine reacts quickly with this organic matter plant and fruit surfaces as well as with soil or other inanimate matter. The products of these reactions make chlorine ineffective in killing microbes. Therefore, free chlorine concentration and NOT total chlorine concentration must be measured to determine the efficacy of the biocide in the tank.

Only free chlorine will destroy microbes. To further understand the difference between free and total chlorine, one can imagine a room full of chairs. With no one in the room, all of the chairs, the total number of chairs, are empty, or free. If several people come into the room and sit down, there is still the same total number of chairs present, but not as many chairs remain empty, or free for more people to sit in. As more people enter the room, all of the chairs eventually become occupied. This is similar to the free chlorine in the dump tank. As it reacts in the water, less is available for sanitizing and more free chlorine must be added to the water.

Effective water chlorination is also dependent on the pH of the water. Maintaining neutral pH (~6.5 to 7.4) maximizes efficacy of chlorine. Lowering the pH below 5 increases the amount of free chlorine, but can also increase off gassing, accelerate the rate at which chlorine is lost from the system (increasing the amount that must be added) and enhance corrosion of equipment. Alternatively, raising the pH above 7.5 reduces chlorine's efficacy.

It is also important to minimize infiltration of dump tank water (and any potential accompanying pathogens) into the tomato. Heating dump-tank water 5°C (about 10°F) above tomato pulp temperature has been shown to reduce infiltration through the stem-end or blossom-end scars and skin breaks and, therefore, reduce post harvest decay.

Tomatoes should be kept in the water for two minutes (one to three minutes). This assures sufficient contact with the sanitizer, while avoiding extended soaking time that can increase water uptake.

For effective sanitation, the dump tank must be frequently monitored for free chlorine, pH and water temperature throughout the packing day. Automated systems using ORP and pH probes are commonly used in the industry, but manual readings should still be made and recorded every 30 minutes to an hour to ensure proper equipment operation. Record keeping is critical for trace-back and evaluation/resolution should a decay
outbreak, occur during later handling, shipping or marketing. Hand-held electronic mV and pH meters, free chlorine test kits, and free chlorine are very reliable for this purpose.

**Dump-tank water is not the only potential source of pathogen inoculation of fruit.** Improper or careless handling during harvest or bin filling/dumping operations can cause serious mechanical damage. Some damage is obvious and is culled by sorters on the packing line. However, some other damage is nearly invisible without close inspection. A good example is the scraping wounds due to fruit rubbing rough bin walls, or abrasion caused by sand grains. Abrasions and micro perforations can directly inoculate the tomato. Sand is most common, but dried plant material, attached stems, wood splinters on bins, etc. can also be causal agents. Open wounds can also become infected later by other pathogens.

**Pesticide Registrations**

**Cabrio labeled** - Dr Tom Kucharek - UF/IFAS Plant Pathologist notes that as of November 7, 2002, Cabrio 2.09 F has a Section 3, Florida approved, label for bulb vegetable, (onions, shallots, garlic, leek), cucurbits (extensive list of types), eggplant, ground cherry, pepino, pepper, tomatillo, tomato, root vegetable (except for sugarbeet), and strawberries.

In addition, Tom notes that Headline (the same active ingredient as Cabrio) was labeled as of the same date for use on potato, yam, and sweet potato.

**Up Coming Meetings**

**Homestead**

**November 19, 2002.**  
**BMP update and outlook for vegetables in Miami-Dade County**  
6:30 PM  
Miami-Dade County Extension Office  
18710 SW 288th Street  
Homestead  
Call 305-248-3311 for more information.

**November 20, 2002**  
**Core/General Standards class**  
Miami-Dade County Extension Office  
18710 SW 288th Street  
Homestead  
Call Lize at 305-248-3311 x 242 to register

**Southwest Florida**

**November 19, 2002**  
**Vegetable Growers Meeting**  
6:00 - 8:00 PM  
The BMP Era- Water and Nutrient Management for Vegetable Producers  
UF/IFAS Southwest Florida Research and Education Center  
Hwy, 29  
Immokalee  
Contact 863-674-4092 for details.
December 13, 2002  Fall Field Day  10 AM - Noon

UF/IFAS Southwest Florida Research and Education Center
Hwy, 29
Immokalee

Contact 863-674-4092 for details.

Other Meetings

December 8-12, 2002  Cucurbitaceae 2002
Naples Beach and Golf Club, Naples, Florida
Contact Don Maynard at 941-751-7636 ext 239 or
dnma@mail.ifas.ufl.edu.

March 10 –13, 2003  Florida Post-Harvest Horticulture Industry Tour
Contact Steve Sargent at 352-392-1928

April 29-30, 2003  FACTs - Florida Agricultural Conference and Trade Show
Lakeland Center, Lakeland, Florida

OPPORTUNITY – Exhibitors wanted for the National Association of County Agricultural Agents Annual Meeting to be held in Orlando in July 2004. This is a great opportunity to present your products to the more than 2500 County Extension Agents from all over the United States that are expected to attend this meeting.

To reserve a place contact Ed Jennings at 352-793-6376.

Quotable Quotes

For four-fifths of our history, our planet was populated only by pond scum. -- J.W. Schopf

Pay no attention to what the critics say; there has never been set up a statue in honor of a critic. -- Jean Sibelius

The thing that impresses me the most about America is the way parents obey their children. -- King Edward VIII

In theory, there is no difference between theory and practice; in practice, there is. -- Chuck Reid

Progress might have been all right once, but it has gone on too long. -- Ogden Nash

If living conditions don't stop improving in this country, we're going to run out of humble beginnings for our great men. -- Russell P. Askue

Websites

FarmAssist 6.1 – by visiting this Syngenta website growers can download FarmAssist 6.1 software free of charge. The software can help growers track their chemical and fertilizer costs, irrigation use, environmental conditions and pest information. Go to www.FarmAssist.com.

Food Safety Questions? – Check out www.ecolab.com/foodsafety. Developed by Ecolab – this site provides information on practices, procedures and products to ensure food safety.
Planet Ag – have you been approached for help with a science fair project? This Florida Department of Agriculture website is designed to help students select a science fair topic and carry out their project. Visit www.florida-agriculture.com/PlanetAg.

On the Lighter Side

Four Question Aptitude & Intelligence Test

The following short quiz consists of (4) questions and will tell you whether you are qualified to be a "professional." The questions are not that difficult, but you must read them very carefully and THINK!

1. How do you put a giraffe into a refrigerator?

The correct answer is: Open the refrigerator, put in the giraffe, and close the door. (This question tests whether you tend to do simple things in an overly complicated way).

2. How do you put an elephant into a refrigerator?

Did you say, "Open the refrigerator, put in the elephant, and close the refrigerator?" (Wrong Answer)

Correct Answer: Open the refrigerator, take out the giraffe, put the elephant in and close the door. (This tests your ability to think through the repercussions of your previous actions).

3. The Lion King is hosting an animal conference. All the animals attend except one. Which animal does not attend?

Correct Answer: The Elephant. The elephant is in the refrigerator. (Remember, you just put him in there! This tests your memory).

Even if you did not answer the first three questions correctly, you still have one more chance to show your true abilities. Now think . . .

4. There is a river you must cross but it is inhabited by crocodiles. How do you manage it?

Correct Answer: You swim across. Remember, all the crocodiles are attending the Animal Meeting. (This tests whether you learn quickly from your mistakes).

POSITION OPEN: Mother, Mom, Mama

JOB DESCRIPTION: Long term, team players needed, for challenging permanent work in an, often chaotic environment. Candidates must possess excellent communication and organizational skills and be willing to work variable hours, which will include evenings and weekends and frequent 24 hour shifts on call. Some overnight travel required, including trips to primitive camping sites on rainy weekends and endless sports tournaments in far away cities. Travel expenses not reimbursed. Extensive courier duties also required.

RESPONSIBILITIES: The rest of your life. Must be willing to be hated, at least temporarily, until someone needs $5. Must be willing to bite tongue repeatedly. Also, must possess the physical stamina of a pack mule and be able to go from zero to 60 mph in three seconds flat in case, this time, the screams from the backyard are not someone just crying wolf. Must be willing to face stimulating technical challenges, such as small gadget repair, mysteriously sluggish toilets and stuck zippers. Must screen phone calls, maintain calendars and coordinate
production of multiple homework projects. Must have ability to plan and organize social gatherings for clients of all ages and mental outlooks. Must be willing to be indispensable one minute, an embarrassment the next. Must handle assembly and product safety testing of a half million cheap, plastic toys, and battery operated devices. Must always hope for the best but be prepared for the worst. Must assume final, complete accountability for the quality of the end product. Responsibilities also include floor maintenance and janitorial work throughout the facility.

POSSIBILITY FOR ADVANCEMENT & PROMOTION: Virtually none. Your job is to remain in the same position for years, without complaining, constantly retraining and updating your skills, so that those in your charge can ultimately surpass you

PREVIOUS EXPERIENCE: None required unfortunately. On-the-job training offered on a continually exhausting basis.

WAGES AND COMPENSATION: Get this! You pay them! Offering frequent raises and bonuses. A balloon payment is due when they turn 18 because of the assumption that college will help them become financially independent. When you die, you give them whatever is left. The oddest thing about this reverse-salary scheme is that you actually enjoy it and wish you could only do more.

BENEFITS: While no health or dental insurance, no pension, no tuition reimbursement, no paid holidays and no stock options are offered; this job supplies limitless opportunities for personal growth and free hugs for life if you play your cards right.

Contributors include: Joel Allingham/AgriCare, Inc, Karen Armbrester/SWFREC, Kathy Carbiener/Agricultural Pest Management, Jim Connor/SWFREC, Bruce Corbitt/West Coast Tomato Growers, Fred Heald/Farmers Supply, Sarah Hornsby/AgCropCon, Cecil Howell/H&R Farm, Loren Horsman/Glades Crop Care, Bruce Johnson/General Crop Management, Dr Mary Lamberts/Miami-Dade County Extension, Leon Lucas/Glades Crop Care, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Jimmy Morales/Pro Source One, Tim Nychk/Nychk Bros. Farm, Chuck Obern/C+B Farm, Teresa Olczyk/Miami-Dade 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/ F& F Farm, Ken Shuler/Stephen’s Produce, Ed Skvarch/St Lucie County Extension, John Stanford/LNA Farm, Mike Stanford/MED Farms, Dr. Phil Stansly/SWFREC, Eugene Tolar/Red Star Farms, Dr Charlie Vavrina/SWFREC, Mark Verbeck and Donna Verbeck/GulfCoast Ag.

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.

Gene McAvoy
Extension Agent II
Vegetable/Ornamental Horticulture  863-674-4092 phone
Hendry County Extension Office  941-860-8811 mobile - Nextel Agnet 28950
PO Box 68  863-674-4097 fax
LaBelle, Florida 33975  GMcAvoy@mail.ifas.ufl.edu

http://hchort.ifas.ufl.edu/
Special Thanks to the generous support of our sponsors; who make this publication possible.

**Thomas Produce Company**  
Of South Florida  
Grower and Shippers of Quality Vegetables  
9905 Clint Moore Road  
Boca Raton, Florida 33496

**LaBelle Plant World, Inc.**  
Tommy Smith: President  
Scott Smith: Vice President  
We Grow Plants for the Pros  
LaBelle, Florida  
Phone 863-675-2020

**Gargiulo**  
Growers Shippers Importers Exporters  
David Pensabene: Production Manager  
Naples Operations  
Phone 941-353-0300  
Fax 941-353-3407

**LaBelle, Florida**  
Phone 863-675-2020

**KeyPlex**  
PO Box 11094  
Naples, FL 34101  
Phone 941-910-4837  
Fax 941-514-0168

**NuFarm Agriculture USA**  
6943 Scarboro Drive  
Fort Myers, Florida 33919  
Phone 941-437-9970  
Fax 941-437-2646

**ProSource One**  
Immokalee, Florida  
Office 941-657-8374  
Cell 941-707-6142  
E-mail: dshelor@ProSourceOne.com

**Florida Favorite Fertilizer**  
787 Overriver Drive  
North Fort Myers, Florida 33903  
Phone 800-457-0807  
Cell 941-707-2272

**Farmers Supply Inc**  
710 Broward Street  
Immokalee, FL 34142  
Phone 941-657-8254  
Fax 941-657-2005

**Dupont Agricultural Products**  
5100 South Cleveland Avenue  
Fort Myers, Florida 33907  
Phone 941-332-1467  
Mobile 941-994-8594

**Green Cay Farms, Inc.**  
Rt. 1, Box 331B  
Boynton Beach, Florida 33437-9727  
Phone 561-499-5345

**Monsanto Crop Protection**  
PO Box 1723  
LaBelle, Florida 33975  
Phone 863-675-4250

**Griffin LLC**  
5843 Deer Flag Drive  
Lakeland, Florida 33811-2078  
Phone 863-607-9303  
Fax 863-607-9403

**Monsanto Crop Protection**  
PO Box 1723  
LaBelle, Florida 33975  
Phone 863-675-4250

**keyPlex**  
PO Box 11094  
Naples, FL 34101  
Phone 941-910-4837  
Fax 941-514-0168

**ProSource One**  
Immokalee, Florida  
Office 941-657-8374  
Cell 941-707-6142  
E-mail: dshelor@ProSourceOne.com

**Florida Favorite Fertilizer**  
787 Overriver Drive  
North Fort Myers, Florida 33903  
Phone 800-457-0807  
Cell 941-707-2272

**Farmers Supply Inc**  
710 Broward Street  
Immokalee, FL 34142  
Phone 941-657-8254  
Fax 941-657-2005

**Dupont Agricultural Products**  
5100 South Cleveland Avenue  
Fort Myers, Florida 33907  
Phone 941-332-1467  
Mobile 941-994-8594

**Green Cay Farms, Inc.**  
Rt. 1, Box 331B  
Boynton Beach, Florida 33437-9727  
Phone 561-499-5345

**Monsanto Crop Protection**  
PO Box 1723  
LaBelle, Florida 33975  
Phone 863-675-4250

**Griffin LLC**  
5843 Deer Flag Drive  
Lakeland, Florida 33811-2078  
Phone 863-607-9303  
Fax 863-607-9403
Special Thanks to the generous support of our sponsors; who make this publication possible.

Glades Crop Care, Inc.  
Leaders in Crop Health Management  
Charlie Mellinger, Ph.D.  
Phone 561-746-3740  Fax 561-746-3775

Glen Kaufman  
Paramount Seeds, Inc.  
PO Box 1866  
Palm City, Florida 34991  
Phone 561-221-0653  Fax 561-221-0102

Robert F. Gregg  
Syngenta Crop Protection  
11051 Championship Drive  
Fort Myers, FL 33913  
Office 941-561-8568  Cell 239-872-8936

PRODUCTION SOILS LLC  
Sam Hipp  
2644 East Oakland Park  
Fort Lauderdale, Florida 33306  
Office 954-563-8753  Fax 954-563-0588

Royster Clark Fertilizer  
880 Prairie Mine Road  
Mulberry, Florida 33860  
Office 800-633-6801

Rachel Walters  
Bayer CropScience  
5243 Tamiami Court  
Cape Coral, Florida 33904  
Phone 239-542-8831  Cell 239-707-1198

Walter Preston  
Manatee Fruit Company  
PO Box 128  
Palmetto, Florida 34220-0128  
Phone 941-722-3279  Fax 941-729-5151

CERTIS USA  
Dr. Adam Muckenfuss 561-781-2233  
Sales: Joe Craig 941-965-1145  
Ed Dickinson 941-318-9004  
Javelin® Agree® Crymax® Lepinox®

Scott Allison  
DIAMOND R FERTILIZER  
1155 Commerce Drive  
LaBelle, Florida 33935  
Phone 863-675-3700  Cell 941-851-0613

Sim Nifong  
Dow AgroSciences LLC  
292 Lake Pearl Drive  
Lake Placid, Florida 33852  
Phone 863-699-9150  Cell 941-745-0237

Glades Crop Care, Inc.  
Leaders in Crop Health Management  
Charlie Mellinger, Ph.D.  
Phone 561-746-3740  Fax 561-746-3775

Glen Kaufman  
Paramount Seeds, Inc.  
PO Box 1866  
Palm City, Florida 34991  
Phone 561-221-0653  Fax 561-221-0102

Robert F. Gregg  
Syngenta Crop Protection  
11051 Championship Drive  
Fort Myers, FL 33913  
Office 941-561-8568  Cell 239-872-8936

PRODUCTION SOILS LLC  
Sam Hipp  
2644 East Oakland Park  
Fort Lauderdale, Florida 33306  
Office 954-563-8753  Fax 954-563-0588

Royster Clark Fertilizer  
880 Prairie Mine Road  
Mulberry, Florida 33860  
Office 800-633-6801

Rachel Walters  
Bayer CropScience  
5243 Tamiami Court  
Cape Coral, Florida 33904  
Phone 239-542-8831  Cell 239-707-1198

Walter Preston  
Manatee Fruit Company  
PO Box 128  
Palmetto, Florida 34220-0128  
Phone 941-722-3279  Fax 941-729-5151

CERTIS USA  
Dr. Adam Muckenfuss 561-781-2233  
Sales: Joe Craig 941-965-1145  
Ed Dickinson 941-318-9004  
Javelin® Agree® Crymax® Lepinox®

Scott Allison  
DIAMOND R FERTILIZER  
1155 Commerce Drive  
LaBelle, Florida 33935  
Phone 863-675-3700  Cell 941-851-0613

Sim Nifong  
Dow AgroSciences LLC  
292 Lake Pearl Drive  
Lake Placid, Florida 33852  
Phone 863-699-9150  Cell 941-745-0237
Special Thanks to the generous support of our sponsors; who make this publication possible.

NOTE: The acknowledgement of sponsorship in no way constitutes or reflects an official endorsement of these businesses or their products or services by either the University of Florida, IFAS, the Florida Cooperative Extension Service, or the Hendry County Extension Office. Sponsors have no control over the content of this publication.