Widely scattered afternoon showers bought slight relief to the area over the past two evenings. Most of the precipitation fell in interior sections with most locales reporting between 0.25 – 2.5 inches of rain. The FAWN Weather Station in Immokalee recorded 0.29 inches on May 21. One grower commented that “He was glad to see it come, indicating that he had seen more rain in the past two days than he had received in the past six months.” Although one would hope that the arrival of afternoon showers signals a shift toward the beginning of a typical summer rainfall pattern, forecasters indicate that the prevailing drought is likely to remain with us for several more weeks and are predicting a late start to the summer rainy season.

Hot dry conditions have prevailed for most of the past few weeks. Temperatures have been a few degrees above normal with daytime highs in the mid to upper 80s and low 90’s with nighttime lows were mostly in the upper 50’s to mid 60s.

The combination of high temperatures and breezy conditions has greatly accelerated evapo-transpiration rates, resulting in widespread reports of crop stress and salt related damage. Pan-evaporation measured at the FAWN Weather Station in Immokalee has ranged between 0.156 and 0.225 inches per day over the past two weeks. The water level in many stock ponds and other small surface water bodies has dropped nearly 12 inches in the past few weeks. Several respondents growing exclusively on drip irrigation have indicated difficulty in maintaining adequate soil moisture levels in crops to keep plants from wilting in the hottest part of the day.

The spring season is rapidly coming to a close in southwest Florida. Many growers are finished for the year and are busy cleaning up fields and preparing to close down shop for a well-deserved break. Hot daytime temperatures are bringing some harvesting activities to an end, improvements in the tomato market has prompted some growers to go back into fields for a second or third pick. Picking for the Memorial Day holiday demand remains active, although supply of most crops is beginning to slow down seasonally. Vegetables available include tomatoes, potatoes, sweet corn, peppers, cabbage, snap beans, squash, cucumbers, eggplant, Chinese cabbage, blueberries, cantaloupes, watermelons and specialty crops. Quality is mostly good.

Wishing you all the best for a safe and restful summer!
The National Weather Service in Miami forecast for the next several days is for partly cloudy conditions with a chance of mainly afternoon thundershowers mostly over inland sections through Monday. Temperatures will range between the low 90’s most days dropping to the low to mid 60’s at night.

Immokalee Weather Summary

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</tr>
</tbody>
</table>

Modified PHASE 2 restrictions for water use remain in effect for South Florida. This includes: Palm Beach, Monroe, Miami-Dade, Broward, Collier, Hendry, Lee, and parts of Glades, Charlotte, and Okeechobee counties.

DISTRICT RESTRICTS SURFACE WATER USAGE IN INDIAN PRAIRIE BASIN

The SFWMD today issued an order effective immediately (May 21, 2001) declaring an emergency water shortage in the Indian Prairie Water Use Basin requiring the termination of permitted withdrawals from surface water sources. The order comes as the Lake Istokpoga-Indian Prairie regional water system is reaching minimum allowable levels in the lake and surrounding canals. The minimum levels were established due to concern for potential damage from low water levels in the canal structures resulting in poor flood control performance. Lake Okeechobee reached another record low of 9.01 today rendering forward pumping stations for the Indian Prairie Basin unusable. Without recharge water from Lake Okeechobee, canals in the Indian Prairie Basin are expected to drop rapidly, eliminating the canals as a water supply system for the users in the primarily agricultural basin.

An Operational Protocol has been established and will be in effect when canals are above minimum levels allowing limited pumping. A special water shortage hotline for the Indian Prairie Basin will be activated May 29th as well as daily updates on the district website, [http://www.sfwmd.gov](http://www.sfwmd.gov). Information regarding water levels and water system status will be available by calling 1-800-544-2323.

SFWMD TO HOLD DAILY WATER SHORTAGE NEWS BRIEFINGS

On Tuesday, May 22 the SFWMD will begin daily 11a.m. news briefings regarding the critical water shortage drought situations. The briefings will be conducted in the District's Emergency Operations Center located on the third floor of the SFWMD headquarters at 3301 Gun Club Road in West Palm Beach.

Due to the increasingly dangerous drought conditions, the District is asking for the media's help in communicating emergency water management operating procedures implemented daily by the District.

"Priority Points" will be issued to the media addressing the most severe issues and actions of the day. Key District staff will attend the daily briefings with the media and will be available to answer questions about the current conditions and operating procedures being implemented.

Since many crops are nearing termination, most growers have scaled back spray applications and are concentrating on trying to get crops harvested before they get burned up.

Pepper weevil populations have reached their typical end of season peak with respondents reporting dramatic increases in several widely scattered locations. A number of respondents have reported observing extensive weevil damage to flower buds and small fruit. Several growers have reported experiencing serious losses from pepper weevils, especially in their hot pepper varieties.
Sanitation is important. Remove old crops and nightshade (an alternate host) and disk crop residues under as soon as harvesting has terminated. Maintain fields free of volunteer pepper and other potential hosts to reduce survival of pepper weevil populations over the summer.

Spider mites remain widespread on a number of crops including eggplant, tomato, watermelon and other cucurbits. A number of growers report applying repeat applications of miticides aimed at spider mites. Damage has been compounded by water stress. Several respondents have indicated that spider mites infestations are most severe where stands of nightshade adjoining plantings. This observation suggests that control of nightshade in unplanted area adjacent to fields will help eliminate this potential source of infestation and may help them reduce possible spider mite problems. On vegetable crops, such as squash, melons, and watermelons, loss of leaves can have a significant impact on yield and result in sun burning. Often leaves, twigs, and fruit are covered with large amounts of webbing. In at least one instances spider mites have lead to early termination of affected crops.

Whiteflies populations are building up across the area with scattered “hotspots” being reported. Counts as high as 50 per plant have been reported, with eggs and immatures present. Along with increased whitefly populations, we are seeing an increase in the incidence of tomato yellow leaf curl virus.

With the current tomato market, many growers are hesitating to spray. Several reports indicate problems with whitefly on watermelon as well. At this stage of the game, many growers are relying on broad-spectrum materials including a variety of pyrethroids, such as Asana, Baythroid, Danitol and Warrior as well as some of the organo-phosphates (Monitor) and carbamates such as Thiodan.

Increased broadmite activity is being widely reported in pepper and to a lesser extent on eggplant.

Aphids are still around in a few locations and populations are reported to be building in cucurbits, peppers and leafy greens.

Worm activity has increased dramatically over the past few weeks.

Pickleworms and melonworms are active in squash and cucumber and respondents have noted significant losses from pickleworm particularly in squash.

In watermelon, there have been scattered reports of so-called “rindworm” activity, where armyworms and/or other caterpillars have caused damage by feeding on fruit.

Several reports have indicated an increase in armyworm pressure across the area. Most respondents report problems with mostly southern armyworms.

Pinworm populations are building in tomato and eggplant. Pheromone traps will help give an early warning. When 3 to 5 moths are caught per trap per night, then mating disruption should be initiated. Insecticidal control can be achieved with products such as SpinTor, AgriMec, Proclaim and Avaunt.

Tomato, potato, eggplant, and tropical soda apple (S. bahamese L), a solanaceous weed, are the only recorded hosts in Florida. Thus, the summer break is effective in reducing populations to low levels, except possibly where soda apple is prevalent.

Several respondents have indicated seeing increased diamondback pressure in brassicas.

There have been several reports of stinkbug populations reaching sufficient levels that have justified late season insecticide applications. The Florida Tomato Scouting Guide sets the economic threshold for southern
green stinkbug in tomato is one stinkbug per 6 plants. Stinkbugs may become a greater problem in the future as growers move away from broad-spectrum insecticides to more pest specific bio-rational products.

**Gummy stem blight has been reported in watermelon from widely scattered locations.** Because other plant disorders can cause exudation of a gummy substance, “gummy-ness” should not be relied upon for diagnosis of gummy stem blight. Anthracnose and inadequate liming can both cause stem lesions and gumming.

**A number of respondents have noted a significant increase in the incidence and occurrence of the disease over the last few weeks.** Gummy stem blight is more severe under wet conditions since moisture from dew, rain or irrigation is necessary for spore germination. The “overnight” spread of the disease that several respondents have noted is the result of secondary spread, which is more difficult to control than primary spread simply because of increased spore numbers with increased diseased tissue.

**Multiple applications of fungicides are necessary to control gummy stem blight.** It is important to begin a fungicide program prior to the first sign of gummy stem blight.

Syngenta has indicated that resistant (insensitive) isolates to of Didymella bryoniae, the fungal pathogen that causes gummy stem blight in cucurbits, have been found in Delaware, Maryland, and Georgia. According to Dr. David Langston, Extension Plant Pathologist in Georgia, the resistant (insensitive) isolates to azoxystrobin that have been found so far in Georgia have originated from watermelon and cucumber.

Azoxystrobin affects sensitive isolates at a single site associated with electron transfer in the mitochondria. Such single site-type of compounds are highly likely cause a selection pressure for resistant (insensitive) strains.

Growers are advised to practice resistant management strategies when using azoxystrobin by:

1) Reducing disease inoculum with every non-chemical technique available,
2) Alternating the use of azoxystrobin with broad spectrum fungicides such as mancozeb or chlorothalonil, and
3) Avoiding the introduction of resistant strains onto your farm by producing or purchasing disease free plants.

Thanks to Dr Tom Kucharek - Plant Pathologist UF/IFAS

**Downy mildew is widespread on cucurbits.** Until recently most infections had been largely restricted to cantaloupe and squash, over the past few weeks there have been several reports of downy mildew showing up on watermelon in a number of locations.

**The use of Bravo should be avoided on watermelon as it begins to set fruit as it can result in sunburn on the upper surface of fruit.** This is especially true under the hot dry conditions that we are presently experiencing. Growers have reported good success in slowing the spread of the disease with Ridomil.

**Powdery mildew remains widespread on squash and has also been appearing on watermelon over the past few weeks.** When powdery mildew occurs on watermelon, it often will not display clear white powdery growth on the leaves as it does on squash and other plant species. The yellowing of leaves is often the first indication that powdery mildew is present. Symptoms may begin as a faint interveinal yellowing on the upper leaf surface of leaves near the crown of a few plants. With the aid of a hand lens, faint white mycelial growth may be seen on the lower side of the leaves. Powdery mildew is capable of producing typical white powdery growth on leaves of watermelon, but in many cases it does not appear that way. Chlorothalonil or Quadris do well in suppressing powdery mildew. To promote good a resistance management strategy, do not use block sprays of Quadris. See caution above. Alternate Quadris with chlorothalonil and other fungicides. The maneb and mancozeb fungicides will also suppress powdery mildew to some extent and they are broad spectrum types which makes them good choices for alternating with Quadris.
Watermelon mosaic is being reported from a number of widely scattered locations. It’s appearance at this stage of the crop is little cause for concern.

Powdery mildew is present in scattered locations in older pepper fields. Powdery mildew is uncommon on pepper in SW Florida. The disease in pepper is caused by the fungi *Leveillula taurica*.

Leaves with mildew growing on the undersurface may show a patchy yellowish or brownish discoloration on the upper surface. The edges of infected leaves may roll upwards exposing the white, powdery fungal growth. Diseased leaves drop from the plants and leave the fruit exposed to the sun, which may result in sunburning. Powdery mildew can be severe and can cause heavy yield losses.

The fungus survives between crop seasons on other crops and on weed species. The degree of survival depends on environmental conditions. Because of the wide host range of the fungus, it is difficult to control the amount of inoculum that survives from one season to the next. Thus, simple sanitation methods in and around pepper fields may not provide a sufficient reduction in the primary inoculum to provide disease control. Most pepper cultivars do not possess acceptable levels of resistance to powdery mildew.

Fungicides can provide satisfactory control and prevent economic loss if applied during the early stages of the epidemic. Effective control requires spraying with high pressure and high volume for optimum penetration of the crop canopy by the fungicide. Good coverage is necessary for satisfactory control.

Bacterial leaf spot has become widespread on pepper and tomato in several locations following the showers experienced a few weeks ago.

Although most reports indicates that the incidence of TYLCV remains low, several respondents have reported a significant increase in the incidence of tomato yellow leaf curl with some fields exhibiting between 3-5% infection rates. Even higher incidence of the disease has been observed in some fields that have been turned over to pin hookers.

Pepper mottle virus has been detected in several fields in eastern Hendry County. Incidence and severity is moderate to high in some fields. The virus results in unthrifty stunted plants.

Several respondents indicate an increase in foliar disease in tomato, such as bacterial spot, early blight, leaf mold and target spot with the reduced use of fungicides in response to depressed markets.

**Platinum and Actara Registered**

The EPA recently registered two Syngenta Crop Protection products for control of sucking and chewing pests. Platinum is a soil insecticide for use in potatoes, tobacco and fruiting and cucurbit vegetable crops. Actara is a foliar insecticide for use in potatoes, pome fruit, tobacco, fruiting vegetables and cucurbits. State registrations in Arizona, California, Florida and New York, plus federal registration for use in leafy vegetables and cole crops, are pending.

The EPA registration of Actara is particularly good news for south Florida pepper producers, who have been awaiting labeling to provide them with a new tool against pepper weevils which can cause devastating losses particularly late in the season. Trials conducted by UF/IFAS entomologist Dr. Phil Stansly in Immokalee, have shown the product to be particularly efficacious against weevils. It is anticipated that the Florida label will be in place for the 2001-2002 growing season.

"One application of Platinum at planting provides long-lasting control of major sucking and chewing insects," says Coby Long, Syngenta insecticide brand manager. "For growers who prefer foliar application, Actara offers excellent residual control with a wide margin of worker safety."
Platinum and Actara both contain the active ingredient thiamethoxam, a second-generation neonicotinoid insecticide. Thiamethoxam has unique chemical properties that offer several advantages over other chemistries, according to the company.

Platinum works faster and more consistently than competitive soil insecticides, according to the company. Platinum is quickly taken up by developing roots and moves rapidly throughout the plant. Once inside the plant, the active ingredient moves upward to protect new growth and provides long-lasting residual control.

Actara foliar insecticide offers extended residual control because it quickly penetrates and moves throughout plant leaves. "We’re using a new term—trans-stemic—to describe this movement," White explains. "This means Actara combines translaminar and locally systemic action in one product."

Thiamethoxam has minimal impact on most beneficial insects, which makes it well-suited for integrated pest management programs. It is not known to be cross-resistant to any other insecticide class.

Select 2EC (Clethodim) Receives Supplemental Labeling

Select 2EC (Clethodim) has received labeling for use on potato, sweet potato, yams (and other tuberous and corm vegetables), tomatoes, peppers (bell and non-bell), eggplant (and others in fruiting vegetable subgroup), celery, carrot, radish, strawberry, squash (including pumpkins), cucumber, and melons (muskmelon and watermelon).

Select is a post-grass herbicide and will control a large number of grassy weeds in the above crops. A crop oil concentrate should always be used in the finished spray mix at 1% v/v. The addition of a liquid fertilizer may be added in applications to potatoes.

Application rate depends on grass species to be controlled. A maximum of 32 fl oz (0.5 lb ai) may be applied per season. Preharvest intervals vary depending on commodity. Read the label for information. The labeling must be in the possession of the user at the time of pesticide application. (Stall, Vegetarian 01-05)

Command 3ME Labeled on Several Vegetables

Command 3ME (clomozone) has received labeling on several vegetable crops. The difference in this product from Command 4E is the microencapsulation of clomozone, which is intended to minimize movement away from the site of application. Applicators should avoid making applications whenever spray particles may be carried by air currents to areas where sensitive crops and plants are growing. Foliar contact with spray drift or vapors may cause foliar whitening or yellowing of sensitive plants.

Command 3ME may be utilized as a soil applied treatment prior to weed emergence, for control or suppression of annual grass and broadleaf weeds in beans (succulent), peppers, squash (including processing pumpkins) sweet potatoes and tuberous and corm vegetables (arrocacha, cassava, tanier, yams). Make a single application in a minimum of 10 gallons of water per acre at the rates specified for each individual crop. Apply as a preemergence soil applied treatment prior to seeding or transplanting. Place seeds, or roots of transplants, below chemical barrier when planting. Command 3ME may be tank mixed with other herbicides registered for use on vegetables to broaden the weed control spectrum. In beans, use the rate of 0.4 pints (0.15 lb ai) per acre, in cabbage use the rate of 0.67 pt (0.25 lb ai) for both seeded and transplants. For cucumbers, melons (muskmelon and watermelon) and summer squash, use 0.4 pints (0.15 lb ai). Higher rates may be used in winter squash and pumpkins, from 0.67 pints to 2 pints.
Peppers are very tolerant to clomazone and a rate up to 2.67 pints (1.0 lb ai) may be used. In sweet potatoes, a rate of 1.3 pints may be made or the product may be applied at 1.5 pints (0.56 lb ai) after transplanting, but before crop emergence. Command 3 ME may be applied at 2 pints (0.75 lb ai) to the tuberous and corm vegetables.

In studies carried out in Florida, i.e., peppers, pumpkins, winter squash, sweet potatoes and yams, are very tolerant to clomazone applications. The cucurbits, beans, and cabbage can be severely bleached if applications above the rates listed for course soils are used. Growers should use the product on a trial basis to gain experience before using the product on large acreages in the more sensitive crops.

At the present time, the Florida registration has not been approved. Registration in the state is anticipated in the near future. (Stall, Vegetarian 01-05)

Up Coming Meetings:

June 2, 2001  Eleventh Annual Farm Safety Field Day
Southwest Florida Research and Education Center
Immokalee, Florida
For information, contact 941-658-3400

June 6, 2001  KaPam/VaPam Certification Course
Southwest Florida Research and Education Center
Immokalee, Florida
For information, contact 863-674-4092

August 3, 2001  Florida Certified Crop Advisor Exam
South Florida Community College
Avon Park, Florida
Call FFAA at (863) 293-4827 for registration information.

Sept. 5, 2001  Florida Tomato Institute
Naples, FL.

Oct. 2-3, 2001  FACTS Meeting
Lakeland, Florida

November 8-9, 2001  17th Annual Tomato Disease Workshop
West Palm Beach, Florida.
Presentations and discussions on the occurrence and management of tomato diseases. Both processing and fresh market tomato problems will be addressed.
For additional information visit: http://erec.ifas.ufl.edu/TDW.htm

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.

Your Fall IPM Program Should Start Now!

As we approach the end of the spring season, it is not too early to start thinking about and even implementing your fall season IPM program. With all the advances in pest management, new chemistries and space age spray rigs, it is often easy to overlook some of the basics.
Action taken now will help build a foundation for next year’s pest control strategy. There are a number of cultural practices that a grower should consider when designing an integrated disease control system. Before planting a crop, a vegetable grower can take a number of steps to help control potential pest and disease problems in the coming season. As a general approach, growers should take steps to grow vigorous, high-quality plants using the best farming practices possible.

One of the most important components in an integrated disease control program is the selection and planting of cultivars that are resistant to pathogens. The term resistance usually describes the plant host’s ability to suppress or retard the activity and progress of pathogenic agent, which results in the absence or reduction of symptoms. It is important to clearly establish a common definition of the term. Growers, researchers, plant breeders, and seed sellers may have slightly different understandings of the term. The word tolerance, which has a slightly different meaning, is sometimes used interchangeably with resistance, resulting in some confusion. By definition, tolerant plants can endure severe disease without suffering significant losses in quality or yield; however, these tolerant plants do not significantly inhibit the pathogen’s activity, and disease symptoms may be clearly evident. Resistant plants usually suppress the pathogen in some fashion.

There are some distinct advantages to planting disease resistant plant cultivars. Such selections are completely non-disruptive to the environment, and their use may enable growers to reduce and in some cases eliminate the application of chemicals used for pathogen control. The use of cultivars resistant to one disease is compatible with disease management steps taken to control other diseases. A final advantage is that for some host-pathogen systems the stability of the resistance is long lasting and the cultivars can remain resistant for many years.

There are some disadvantages to the use of resistant cultivars. The greatest shortcoming is that resistance is not available for all diseases on all crops. For several of the most damaging plant diseases, such as tomato late blight (Phytophthora infestans), no acceptable resistant cultivars are yet available. Seed companies and plant breeders rarely invest in efforts to develop resistant cultivars for specialty or minor crops. Another shortcoming of some resistant cultivars is that some selections lack adequate horticultural characteristics in regard to appearance, quality, color, yield, and other important criteria.

A cultivar that is resistant to one disease may be quite susceptible to another important disease or insect pest. A final disadvantage to resistance is that, depending on the host-pathogen system, resistance is not long lasting and new strains of the pathogen readily develop, making the crop susceptible once again. Depending on the particular disease involved, the failure of plant resistance can be either a rare or a regular event. In most cases, resistance failure is attributed to the development of new strains of the target pathogen that overcome the resistance genes of the previously resistant cultivar.

Despite the challenges of developing resistant cultivars and the setbacks of resistance breakdown, resistant plants remain an important weapon for disease. Growers are encouraged to actively and thoroughly investigate which resistant cultivars are available and to test to determine which cultivars perform best under their particular growing conditions.

Before planting crops, a grower should carefully plan out planting and crop rotation strategies to avoid insofar as possible any known problem areas. A grower can incur significant losses if he or she plants susceptible crops in a field known to be infested with persistent soilborne pathogens. Plant-pathogenic fungi such as Fusarium and Sclerotium, are true soil inhabitants and will persist in soil for many years, even in the absence of a plant host. Because not all fields are infested with these fungi, growers are advised to select a planting site away from such fields. Soil-borne fungi such as Phytophthora, Pythium, and Rhizoctonia often are much more widespread, so site selection might be less of an option in avoiding these organisms.

Steps taken prior to and during the planting process can also influence disease. Attention to crop rotations and crop residue incorporation, can help prevent population buildup in many pest species. The practice of
growing the same crop continuously, season after season, on the same piece of ground is an invitation to insect pests and diseases

**Summer weed management can be a challenge.** Growers should check field margins to make sure that pest species are not building up there and migrating out into cropping areas. Many insects over summer on weeds, so efforts to control them can be profitable by reducing their movement into the crops next growing season.

**Weeds are also known reservoirs of a number of viral and bacterial pathogens.** Weeds and volunteers should be removed to prevent the survival and over-summering of pathogens that could serve as inoculum reservoirs for the next crop. Techniques such as mowing off pepper should not be relied upon as this often results in re-sprouts, which can harbor pests and disease problems over summer.

**The use of cover crops and summer fallowing of fields are also effective tools** in reducing weed populations that can cause problems in the subsequent crop. The role of summer fallow in weed management is often overlooked. Summer fallow keeps new weed seeds from being added to the soil seed-bank. It also reduces the increases in asexual propagated plants such as nutsedges. Yellow nutsedge can put out 70 new tubers (nuts) every two months. Keeping the weeds from propagating will reduce the weed problems encountered during the next cropping season and help reduce insects and diseases that may over summer in weedy fields.

**Chemical fallowing is a twist on the traditional method of fallowing** that depends on disk ing fields through out the summer period to reduce weed pressure in subsequent crops. One approach uses Roundup to kill weeds during the crop free period.

**Vegetable growers need to provide optimum growing conditions for their crops.** Many plants are able to withstand insect feeding if they are actively growing and are able to compensate for some loss of foliage and root tissues. Soil nutrients can affect crop vigor. There is no substitute for soil testing to determine a fertilization program. Excessively low or high soil pH may induce physiological problems or predispose crops to attack by pests and disease. This past season, I saw several problems that might have been averted by checking and maintaining a favorable soil pH.

**Poor soil preparation can result in stressed and exposed plants and increased damping-off problems due to soil fungi.** Proper preparation of the field and the subsequent raised beds will help reduce problems in areas that are subject to poor drainage, pooling of water, and other conditions that favor pathogens. Soil and bed preparation should result in good soil tilth so that seed or trans-plants are placed in a soil that favors plant development. Planting depth for seed or transplants should be tailored to enhance seed emergence or transplant establishment.

**The practice of keeping out any materials or objects that are contaminated with pathogens or diseased plants and preventing them from entering the production system is known as exclusion.** For some diseases, seed borne pathogens are a primary means of pathogen dissemination. Growers should purchase seed that has been tested and certified to be below a certain threshold infestation level or that has been treated to reduce pathogen infestation levels. Note that the designation “pathogen-free seed” really is not a valid term because it is not possible to know whether a seed lot is, in its entirety, absolutely free of all pathogens. Seed tests only examine representative samples, but in most cases the tests are accurate enough to give a true picture of the risk of diseases initiated by seedborne pathogens.

**When purchasing transplants, they should be free of as free as possible pathogen contamination (where the pathogen is present on the plant but has not yet caused visible symptoms) and from disease (where symptoms are actually visible).** Sanitation measures are important in greenhouse situations. The removal of dead or dying transplants can help reduce inoculum that could otherwise spread to adjacent transplants. Evidence of poor sanitation may suggest that you look more closely at your choice of transplant producer.
Soil and water can harbor pathogens as well. Take care to see that no infested soil or water is introduced into un-infested areas. Pathogens may be found in surface, flood, and runoff waters. Growers who have dredged up soil from ditches and dispersed it onto fields may introduce inoculum of pathogens such as phytopthora. Water draining from fields can carry a number of pathogens, and growers should not recycle or reuse it without carefully considering potential risks and then taking appropriate safety precautions. Soil adhering to tractor equipment and implements can spread soilborne pathogens and weeds from infested fields into clean fields. It is a good idea to reduce the movement of these infested materials as much as possible.

Incorporation of composts into soils is a fundamental cultural practice in organic production, which can be extended to chemical systems as well. Composts benefit the soil’s fertility and condition in a number of ways, and also undoubtedly benefit disease management in some way. However, research studies and empirical data that clearly document any disease control benefits resulting from field-application of compost are lacking. Despite this lack of information on disease control, composts should benefit soils by increasing soil microflora diversity and populations.

Soil solarization is the use of plastic tarps placed on the soil surface to increase soil temperatures to a level that kills soilborne pathogens, weeds, and other crop pests. Soil solarization works best when summer temperatures are uniformly high. These conditions don’t always occur in Florida. Soil solarization will not eradicate a pathogen from a field, but it may lower pathogen populations.

Soil flooding is a related means of creating conditions—in this case, saturated soil over an extended period—that might result in a decline of soil-borne pathogens.

Field sanitation is one of the most important tactics in vegetable pest and disease management. One of the best things that growers can do for themselves and their neighbors is to clean up crop residues promptly after harvest. Sanitation is an important IPM technique that should not be overlooked as an effective, preventative tool against many vegetable pest and disease problems. Sanitation includes any practice that eradicates or reduces the amount of pathogen inoculum, pests, or weed seeds present and thus helps reduce or eliminate subsequent pest and disease problems.

Prompt crop destruction at the end of the season will immediately end the production of disease inoculum and insects and eliminate the spread of diseases and pests to any other host plants in the vicinity. Downy and powdery mildew on melons can spread via wind from older, diseased plants to plants in surrounding fields that are still maturing. These diseases are obligate parasites. This means that they can only grow and multiply on living host tissue. Some plant pathogens, such as the bacterium that causes bacterial spot of tomato and pepper, are unable to survive for extended periods of time outside of the host tissue. Plowing or disking under infected plant debris helps not only by covering up the inoculum but also speeds up the disintegration of plant tissue and kills the pathogen. Good sanitation will help control a number of important vegetable pathogens.

Soil tillage can destroy insects and expose them to birds and other predators. It can also speed the breakdown of plant residues that harbor insects and plant pathogens. By either allowing the organic matter in a field to decompose completely before you plant the next crop and/or allowing a fallow period between crops, you can enhance the control of a number of insects and diseases.

Destruction of tomato vines will kill off white fly populations and eliminate transmission of the tomato yellow leaf curl virus to subsequent crops and also eliminate inoculum from late blight and other fungal diseases. This is particularly important in the case of TYLCV, as sanitation and whitefly control are the only tools currently available for the management of this disease. A crop-free period is also considered a necessity for the control of a number of other important vegetable pests such as pepper weevil, tomato pinworm, and Thrips palmi and is recommended for management of all vegetable pests.
Crop rotation is an important consideration in disease management. Rotation employing the inclusion of cover crops, and appropriate use of fallow (host-free) periods can contribute to the reduction of inoculum levels for soil-borne pathogens and the increase of diversity in soil microflora. In contrast, consecutive plantings of the same crop in the same field often lead to increases in soil-borne pathogens. Inadequate rotation can simulate a monoculture effect that might increase foliar diseases. Proper rotation of pest-susceptible main crops with non-susceptible cover crops can keep pest numbers low. The incorporation of a grass species into a rotation is often recommended, as grasses tend to be resistant to most of the insect and disease pests of common cash crops.

Recent research has shown that certain plants can have a suppressive effect on diseases and nematodes. For example, after broccoli and other crucifer crops are harvested and the plant residue is plowed into the soil, the decomposition of the broccoli stems and leaves releases natural chemicals that can significantly reduce the number of certain pathogens. This broccoli effect can be an important consideration in crop rotation strategies. Some cover crops (mustards, sudangrass) might also share this beneficial effect and could be considered in the crop rotation scheme. It is important to remember that while rotations with non-susceptible plants and cover crops may help reduce soil-borne pathogen numbers, significant decreases in such populations are likely to take many seasons.

When devising a crop rotation strategy, a grower should also be aware of which crops and cover crops might increase disease problems. Sunn hemp might increase soil populations of *Pythium* and *Rhizoctonia* damping-off fungi. Some varieties of cowpea may host root-knot nematode. There are many factors to consider in regard to planting a crop.

Cover crops planted prior to the main cash crop can also improve soil fertility and provide a valuable source of organic matter.

An integrated approach to pest and disease management will become increasingly important in face of the impending loss of methyl bromide – whose ease of use and effectiveness in controlling a wide range of problems allowed us to neglect some of these practical common sense pest management techniques.

**WORKSHOPS PLANNED FOR EVERGLADES RESTORATION PUBLIC OUTREACH AND SOCIO-ECONOMIC PLANS**

Six public workshops are planned June 5 to 14 to receive final comment on two program management plans for the Comprehensive Everglades Restoration Plan (CERP). The plans are Public Outreach, and Socio-economic and Environmental Justice.

The Comprehensive Plan outlines the world's largest ecosystem restoration project. It is intended to protect the Everglades, while providing freshwater supplies for South Florida's growing urban and farming communities over the next 50 years. The Plan outlines many projects to capture and store 1.7 billion gallons of excess freshwater sent to sea on average every day through the regional canal system. Its estimated $7.8 billion cost will be funded jointly by the federal and state governments over many years.

The plans have been under development since February, and will be finalized in July. They are posted on the Internet for public review: [http://www.evergladesplan.org/pm/pm_index.htm](http://www.evergladesplan.org/pm/pm_index.htm) Printed copies can be obtained by calling the South Florida Water Management District: (561) 682-6013, or 1-800-432-2045, ext. 6013.

All workshops will be held from 7 p.m. to 9 p.m. Dates and locations follow:

**June 5**
South Florida Water Management District Auditorium
3301 Gun Club Road
West Palm Beach, FL 33406
(561) 686-8800; 1-800-432-2045
June 6  Beardsley Room (back of the John Boy Auditorium)
South W.C. Owens Avenue
Clewiston, FL 33440
(863) 983-1492

June 7  Fort Myers Service Center
South Florida Water Management District
2301 McGregor Boulevard
Fort Myers, FL 33901
(941) 338-2929; 1 (800) 248-1201

June 11 Broward County Library
Fort Lauderdale Branch (at 14th Avenue)
1300 East Sunrise Blvd.
Fort Lauderdale, FL 33304
(954) 765-4263

June 12 Joseph Caleb Center
5400 NW 22nd Ave.
Miami, FL 33142
(305) 636-2250

June 14 W R Thomas Middle School Cafeteria
13001 SW 26th St.
Miami, FL 33175
(305) 995-3800

For further information, contact Ellen Underwood, Senior Government and Public Affairs Representative, at (561) 682-6013 or 1-800-432-2045, ext.6013.

Auction Sale – June 2, 2001

Location: SR 82, Lehigh at Robert McMahon Farms (on the south side of the road near the deep curve at Halfway Pond)
Date: Saturday June 2, 2001 at 9:30 AM
Auction Company: DeMott Auction Co. Inc.
Contact: Maryland Wilson at 863-381-9383

A wide range of tractors, vehicles, construction equipment, general farm equipment and specialized potato equipment too long to list will be offered for sale.

Top Seven Agrochemical Companies in 2000

Corporate consolidation continues to reduce the number of agrochemical/crop biotechnology companies. In 2000, there were only seven companies with sales of more than US$1 billion dollars. In comparison, 11 companies had sales above the US$1 billion mark in 1995. These included Ciba Geigy, Sandoz, AgrEvo, Rhone-Poulenc and Cyanamid, none of which now exist due to corporate mergers.

Syngenta, formed by a merger of Novartis and Zeneca in November, topped the list with sales approaching US$6 billion. The German multinational corporation BASF saw a 39% increase in sales, the largest increase of the top seven but due almost entirely to the acquisition of Cyanamid. Monsanto and Bayer were the only two other corporations showing increased sales in 2000, at 8% and 13% respectively.
Monsanto's increase was due primarily to sales of Roundup (glyphosate), which accounted for 67% of Monsanto's total sales. Volumes of Roundup sold increased 20% in the U.S. and Argentina, and 16% worldwide -- due to higher sales of Roundup Ready (glyphosate tolerant) crops and glyphosate-based no-till farming practices. According to Monsanto, Roundup Ready soy planted in the U.S. rose by 12%, making up 60% of total U.S. soybean acreage. In Argentina, plantings of Roundup Ready soy increased by 3%, with 90% of the soy in that country now genetically engineered to be glyphosate tolerant. Roundup Ready corn is currently grown on three million acres, but Monsanto sees the potential global market at 200 million acres.

Aventis CropScience had virtually no increase in sales in 2000. While sales for Aventis were up in Brazil and the U.S., these gains were offset by low sales in the Asia/Pacific region and in Europe. Aventis was also forced to pay more than US$90 million to cover some of the costs of the StarLink crop buy back last year. Genetically engineered StarLink corn was approved in the U.S. only for use as animal feed; however, the corn was found in corn supplies and products for human consumption. Company officials have admitted that the final amount could be several times higher than that paid in 2000.

In April 2001, Aventis announced that it would sell off its CropScience division rather than seeking a separate stock market listing. The company has sent a sale proposal to Monsanto, DuPont and Dow, and to two German firms -- Bayer and BASF.

2000 Top Seven Agrochemical Companies

<table>
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<tr>
<th>Company</th>
<th>2000 sales (US$ mill.)</th>
<th>% change vs. 1999</th>
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<tr>
<td>Syngenta</td>
<td>5,888</td>
<td>-2.6%</td>
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<tr>
<td>Monsanto</td>
<td>3,885</td>
<td>+8.3%</td>
</tr>
<tr>
<td>Aventis</td>
<td>3,701</td>
<td>-14.3%</td>
</tr>
<tr>
<td>DuPont</td>
<td>2,511</td>
<td>-3.1%</td>
</tr>
<tr>
<td>Dow</td>
<td>2,271</td>
<td>-0.1%</td>
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<tr>
<td>Bayer</td>
<td>2,252</td>
<td>-2.8%</td>
</tr>
<tr>
<td>BASF</td>
<td>2,228</td>
<td>+20.0%</td>
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</table>

Sources: World Crop Protection News, January 5, March 2 and April 13, 2001.

Websites

ATTRA – Appropriate Technology Transfer for Rural Areas – is the national sustainable farming information center operated by the National Center for Appropriate Technology. ATTRA receives funding from the USDA and provides technical assistance to farmers, Extension agents, market gardeners, agricultural researchers, and other ag professionals in all 50 states. Topics addressed by ATTRA include three broad areas: sustainable farming practices, alternative crop and livestock enterprises, and innovative marketing. You can find lots of good information here. Set your browser to http://www.attra.org/

MeisterPRO Link Central – claims to have more links to agricultural-related companies and organizations than anyone else on the Web. Go to http://www.meisterpro.com/pub/links/

Quotable Quotes

“No problem is so formidable that you can’t just walk away from it.” – Charles Schultz

“Hell hath no fury like a bureaucrat scorned.” – Milton Friedman
On the Lighter Side

MONEY………

It can buy a house, but not a home.

It can buy a bed, but not sleep.

It can buy a clock, but not time.

It can buy you a book, but not knowledge.

It can buy you a position, but not respect.

It can buy you medicine, but not health.

It can buy you blood, but not life.

It can buy you sex, but not love.

So you see, money isn’t everything. The best things in life can’t be bought, and often we destroy ourselves trying!

I tell you this because I am your friend, and as your friend I want to take away your needless pain and suffering… So send me all your money and I will suffer for you. CASH ONLY, please!

This will be the last regular Pest and Disease Hotline issued for this season. We will resume publication this fall and wish to acknowledge and extend our sincerest thanks to all our many contributors who shared valuable information, which has made the hotline so successful and also the generous support of our sponsors with out which publication of the hotline would not be possible.

Contributors include: Karen Armbrester/SWFREC, Jim Connor/SWFREC, Bruce Corbitt/West Coast Tomato Growers, Fred Heald/Farmers Supply, Sarah Hornsby/AgCropCon, Cecil Howell/H&R Farm, Leon Lucas/Glades Crop Care, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Tim Nychnk/Nychk Bros. Farm, Chuck 0berp/C+B Farm, Dr. Pam Roberts/SWFREC, Wes Roan/6 L's, Kevin Seitzinger/Gargiulo, Jay Shivler/ F & F Farm, Ben Stanaland/Pacific Tomato Growers, John Stanford/LNA Farm, Mike Stanford/MED Farms, Dr. Phil Stansly/SWFREC, Eugene Tolar/Red Star Farms, and Dr.Charlie Vavrina/SWFREC, Donna Verbeck/GulfCoast Ag.

The SW 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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<td>Phone 941-722-3279 Fax 941-729-5151</td>
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<td>Robert F. Gregg</td>
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<td></td>
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