April 3, 2000

Storms associated with the passage of a series of minor cold fronts bought some rain to the area on March 18 – 19 and again on March 27 – 29. Rainfall was quite variable across the area with some places reporting over 3 inches of total precipitation for the period, while others saw only a few tenths of an inch. The FAWN Weather Station in Immokalee recorded a total of 1.54 inches of rain for the period. In general, rainfall was highest along the coast and in the northern parts of our area. Despite the welcome rain, most growers indicate that they are running their irrigation pumps around the clock in an effort to maintain adequate soil moisture for optimum plant growth. Increasing temperatures and windy conditions have increased evapo-transpiration rates. There have been several reports of growers having difficulty in irrigating. There have also been scattered reports of salt related problems in seep irrigated crops. Others have reported some amount of blossom end rot and cat facing of fruit. Growers on drip systems have generally avoided such problems. The National Weather Service has indicated that the La Nina influenced spring drought that the southern states including Florida has been enduring is going to persist and may intensify in some areas.

Temperatures continue to inch upwards as the season progresses. The past two weeks saw temperatures averaging 2 to 5 degrees above normal. Daytime temperatures have ranged from the low to upper 80’s with nighttime temperatures ranging from the high 50’s to the upper 60’s. Several mornings have seen patchy fog. The National Weather Service forecast calls for a 20% chance of rain and possible thunderstorms on Tuesday as a mild cool front pass through the area. This will be followed by clearing and slightly cooler weather over the next few days.

Planting of most crops, including peppers and tomatoes has been completed. Major vegetables harvested during the week include potatoes, tomatoes, peppers, cabbage, cucumbers, snap beans, squash, sweet corn, eggplant and some watermelon. Warmer temperatures have caused a general increase in insect pressure, while disease pressure remains fairly light.

Thrips populations remain at fairly high levels across the area and most respondents are reporting that populations have reached threshold levels and control measures are being effected. Although thrips are being seen widely in several crops including tomato, pepper, eggplant and cucurbits, surprisingly few problems
Several growers report that populations are mobile, moving from field to field and are requiring continued efforts to keep them in check. The main thrips species being observed are Florida flower thrips – (Frankliniella bispinosa). There are some scattered reports of dimpling on tomato fruit associated with flower thrips inserting eggs on small fruit. Dimpling is generally almost non-existent in the fall and most severe in the early spring when thrips are most abundant.

Damage to pepper fruit has been more widely reported and is presently of greater concern to growers. There have also been a few scattered reports of melon thrips (Thrips palmi) causing injury on pepper foliage.

The Florida Tomato Scouting Guide sets threshold levels at >5 thrips per bloom. According to information from Dr. Dave Schuster, Entomologist at the Gulf Coast Research Station in Bradenton, thresholds were set from a literature review of work done in California and experiments at the Bradenton center that confined thrips on tomato flowers in cages. There was an increase in flower abscission when the thrips density was about 5-7 per bloom.

Schuster also indicates that there are many factors, which can influence flower abscission making the question of a thrips threshold is a difficult one to answer. If the weather is hot, or nitrogen fertilizer levels are too high or under conditions of high humidity or when there are a large number of fruit are already set, lower numbers of thrips seem capable of causing additional flower abscission. All of which are conditions that are normally present in our area.

When these conditions are not present, there seems to be no or little effect of thrips. Some researchers have indicated that 'low' levels of thrips may actually helps in fruit set in tomatoes.

Pepper weevil numbers are building in many locations. In several instances, they have moved into new fields causing damage in young plants including damage to foliage and growing points and weevil larvae have been observed in dropped flower buds in pepper that is just starting to set fruit. At present Vydate 2L is the most efficacious product available to growers for the control of pepper weevil. Novartis Crop Protection is hoping to obtain a label for a new product Actara for the control of weevil in pepper in the near future. Research conducted by Dr. Phil Stansly at SWFREC in 1999 demonstrated comparable control with two sprays of Actara three weeks apart to that provided by seven weekly applications of Vydate. Labeling of this material would provide growers with a welcome alternative product for rotation with Vydate in pepper weevil control.

Moderate populations of aphids continue to be reported across the area. Sizeable populations continue to be observed in several crops including eggplant, leafy greens, melons, pepper, potato, squash and tomato. Several growers are reporting some difficulty in obtaining satisfactory control on larger plants. There is some indication that populations are beginning to decline.

A number of reports indicate that armyworm pressure has returned to fairly high levels, which have not been seen since last fall. Most respondents indicate finding mostly southern armyworms, although there have been some scattered reports of problems with beet armyworms in pepper. Armyworms are active in tomatoes, peppers, cucurbits and a number of other crops. There have been scattered reports of armyworms contributing to rindworm damage in watermelon.

Note: Phil Stansly caught an error in the last hotline. The section on control of armyworm with pyrethroids should have read “When using synthetic pyrethroids it is important to rotate them with materials with different classes of chemical activity, avoiding pyrethroids back to back to help prevent the buildup of resistance in pest populations. Gremlins!!
Pinworm numbers are up in some areas. Traps counts of 12 or more per night are being reported from some locales while others are reporting little problems to date. Growers should begin to apply controls once thresholds of 5 adults per trap per night are observed.

There have been few reports of melonworms and even fewer of pickleworms to date.

Spider mites appear to be on the rise in several crops. Several growers are experiencing problems with spider mites on eggplant, tomato, as well as melons, cucumbers and other crops. Occurrence is sporadic and damage is low to moderate in most cases.

Because mites can grow from egg to adult in five days during hot, dry weather, populations build rapidly. Since miticides often have little effect on eggs, they requiring multiple applications for effective suppression. Since a generation can mature and reproduce in as little as five days, repeat applications should be made every five days to target hatching eggs and break the reproductive cycle. Thorough coverage is also extremely important in mite control.

Broadmites are being reported in pepper and eggplants. Occurrence is sporadic and damage low.

Whitefly populations are reaching fairly high levels in some older tomato fields where counts of 10 or more per plant are not uncommon. A number of growers are reporting high populations of whiteflies in pepper from several widely scattered locations. In some instances, growers are reporting movement from pepper to adjacent tomato plantings. Whiteflies are also building up in melons and cucumbers. In general, populations remain below levels seen in previous years. It is important to remember that whitefly populations can develop rapidly under long days and high temperatures at this time of year.

Despite increased whitefly pressure, TYLCV remains low. Most growers are still seeing only isolated occurrences of single infected plants here and there. Several respondents have noted a slight increase in the incidence of TYLCV. Incidence remains well below 1% in most cases. However, whereas a few weeks ago it was necessary to cover 50 – 100 acres to find one infected plant, it is now possible to find one infected plant in every 5 – 20 acres in a number of locations.

Reports from tomato producing areas to our north indicate significantly higher TYLCV levels. Grower complacency resulting in any appreciable relaxation of control efforts in could still result in significant increases in the incidence of this disease in the future.

Respondents have reported the occurrence of powdery mildew in watermelon. Incidence is sporadic and damage low. Powdery mildew is also widely present in zucchini and yellow squash particularly in older fields.

Downy mildew has been reported on cucurbits from several widely scattered locations across the area. Recent rains have flared the disease in some areas. Most reports of the disease are from cucumber, muskmelon and specialty melons. Symptoms first appear as small, angular, yellow lesions on the upper side of the leaf. A white to purplish mildew may be observed on the lower side of the leaf during humid weather. As the lesions expand, their centers turn brown. Often the margins of diseased leaves curl upward. During favorable weather, leaf lesions coalesce and kill large areas of the leaf surface. This results in a stunting of the plant and a failure of the fruit to mature properly. Even those fruit, which reach maturity, may have an off-flavor. In severe cases, the entire plant will die.

It may be necessary to spray twice each week to maintain spray on new foliage given rapid growth of vines under the favorable growing conditions we have been enjoying for the past several weeks.
Control of downy mildew is dependent on cultural practices, early detection and timely applications of fungicides. It's a good idea to inspect fields regularly for any evidence of downy mildew or other disease problems. **Early detection is essential** for the proper control of foliar pathogens.

Both of these diseases will begin as just a few spots on the leaves or stems but after a period of time their severity increases rapidly. **If fungicide sprays are delayed until the disease is visible through the windshield of your car or pickup truck, it is difficult to control downy mildew.** If your spray program begins after the appearance of disease with a non-therapeutic fungicide, you can expect an increase of visible disease up to 7-10 days later because of infections already present.

**If weather conditions become favorable for the development of downy mildew, begin protective fungicide applications and continue on a 4-7 day interval.** Protective fungicides such as mancozeb or chlorothalonil also will protect the plants from other foliar diseases. If downy mildew is already present in the field, it is advisable to use a systemic fungicide (Ridomil) to arrest disease development. This type of fungicide will stop lesion expansion once infection has occurred. A combination of chlorothalonil and metalaxyl (Ridomil-Bravo) has been shown to have a positive synergistic effect in controlling downy mildew. **Note:** Ridomil-resistant strains of downy mildew have been detected in Florida. New strobularin-based fungicides such as Quadris have also given good results in halting infections.

**Early blight** and **target spot** has been reported on tomato. **Incidence and occurrence is low.** In general, however, problems with **foliar diseases** on tomato and pepper have been **minimal.**

**Some localized increase in bacterial leaf spot** activity on pepper and tomato has been reported following recent rainy weather. As might be expected problems have been greatest in areas most affected by recent rains. **Incidence and damage is low and occurrence patchy.** In addition, there have been a few isolated reports of bacterial speck on tomato.

**Low levels of alternaria leaf blight** and **gummy stem blight** has been noted in watermelon. **Occurrence is sporadic and limited. Incidence is low.**

**Mosaic is widely present in squash across the area.** In some older fields over 50% of the planting has been affected. **In our area, mosaic on squash tends to be predominately papaya ringspot virus type w, watermelon mosaic virus 2, and zucchini yellow mosaic virus.** In general symptoms on young infected plants include prominent vein clearing, chlorotic spotting and a mosaic on leaves. Older plants may exhibit stunting with varying degrees of mottling, leaf blistering and malformation and vein extension along leaf borders depending on the strain of virus, age of infection and possibly other factors.

**Yellow squash varieties** will exhibit varying degrees of fruit greening in a striped or mottled pattern, sometimes with raised yellow blisters. Green-fruited squash may lighten or mottle in color as well as blister. Fruit distortion can be severe across squash types.

Although **papaya ringspot virus type w** is sap transmissible, **spread is largely by aphids** coming from infected cucurbit weeds and cucurbit crops. Leafminers also can transmit PRSV-W. Control can be improved by the elimination of volunteer cucurbit crops and cucurbit weeds near the crop. Creeping cucumber and balsam apple are two major weed hosts for PRSV-W. When planting cucurbits, separate them from other plantings of cucurbits to the extent possible. Keep this point in mind when you are planning for successive plantings. **This virus predominates in south and central Florida.**

**Watermelon mosaic virus 2** (WMV 2) has become the most widespread virus in squash and watermelons in central and north Florida. Although, WMV 2 is sap transmissible, **spread is primarily by aphids.** Leafminers have been shown to transmit this virus. WMV 2 has a wide host range including legumes but the source plants for this virus in the field have not been determined. WMV 2 has not been demonstrated to be seed-borne.
Fall plantings or late spring plantings are more likely to incur more damage than early spring plantings. However, entire early spring plantings have incurred serious damage from WMV 2.

**Zucchini yellow mosaic virus (ZYMV)** is found in Florida from Dade to Hamilton Counties, but the incidence is sporadic. Although ZYMV can produce symptoms similar to PRSV-W or WMV 2, it has a tendency to produce severe leaf and fruit distortions. Spread is primarily by aphids but it can also be mechanically transmitted by plant sap. Conflicting reports exist about the seed transmissibility of ZYMV in squash.

**Several cultural control methods may help reduce the severity of virus infection.** Do not crop squash behind or adjacent to other cucurbit crops since this viral disease affects all cucurbits. Isolation of squash fields may limit aphid buildup from other crops and use of non-host crops (solanaceous crops), as buffer fields should reduce field to field spread. Control weeds prior to cropping. Use of JMS Stylet Oil on a schedule can reduce losses to virus. **When applying oil it is important to use high pressure to obtain adequate coverage.**

Recently, varieties of squash with resistance to mosaic have become available. **Two types of resistance** are currently available. Varieties with transgenic resistance have demonstrated excellence resistance to WMV 2 and ZYMV. Some of the most promising transgenic varieties include Prelude II, Liberator II, Destiny, Revenue and Dividend.

In addition to varieties with transgenic resistance, research in Florida and elsewhere has shown that squash varieties that incorporate the so-called precocious yellow gene have exhibited resistance to mosaic as well. In these varieties, the plants are infected but the fruit remain largely unaffected. Meigs and General Patton are two squash cultivars, which incorporate the precocious yellow gene.

**Watermelon mosaic on watermelon** is being reported from several widely scattered sites. Incidence is low.

**Fusarium wilt** has been reported on watermelon in scattered locations across the area. **The disease may affect plants in all stages of growth. The most common symptom on older plants is wilting.** On fumigated beds and in double crop situations, this often occurs as the plants begin to run of the beds and roots encounter untreated soil. Generally, the wilting process begins in one or more lateral vines of the plant. The leaves become flaccid, wither, and turn brown. Gradually, the wilting progresses until the entire plant is killed. **Vascular discoloration often is associated with wilted vines.** This is seen by slicing vertically through a vine near the soil surface. Look for a yellow-brown discoloration in tissue directly beneath the outer layer of the vine. A white fungal growth also may be formed at the base of the dead vines.

**The most satisfactory means of controlling fusarium wilt is the use of resistant varieties.** Use only cultivars with resistance in fields where wilt has been a problem. Nearly all commercial varieties have some degree of resistance to Fusarium wilt and anthracnose. It should be understood that resistance to these diseases is not complete; some plants within a population are susceptible and resistance may be overcome under high levels of disease pressure.

**Downy mildew has been reported on crucifers** in several locations. Most severely affected are crops nearing maturity where damage is largely restricted to wrapper leaves, which are normally removed at harvest. **Incidence is low to moderate and damage is low.**

**Note:** The United States Department of Agriculture - USDA is accepting public comment on the recently proposed National Organic Standards. If you would like to comment by email on the proposed National Organic Standards, please send your comments to the Organic Consumers Association at info@organicconsumers.org they will be forwarded on to the USDA. The USDA has chosen to not provide an email address for submitting comments, so OCA will provide this service for those who wish to comment by email.
To submit comments via the web site: Go to http://www.ams.usda.gov/nop

When faxing or mailing comments you must refer to: Docket number: TMD-00-02-PR2

To send comments by fax to the USDA: 703-365-0760

To send comments by regular mail: Keith Jones, National Organic Program, USDA-AMS-TMP-NOP, Room 2945-So., Ag Stop 0275, PO Box 96456, Washington, D.C. 20090-6456

The 90 day comment period ends on June 12, 2000.

Up Coming Meetings:

April 19, 2000
Vegetable Growers Meeting – 5:30 – 7:30 PM
“An Overview of Nutrient Supply through Foliar Applications” and “Foliar Nutrients and Bio-Stimulants in Vegetable Crops”
Southwest Florida Research & Education Center, Immokalee
For more information, contact Gene McAvoy at 863-674-4092

April 26, 2000
Getting Paid for Fresh Produce Sales – 7:30 –8:30 PM
Lee County Cooperative Extension
3406 Palm Beach Boulevard
Fort Myers, FL 33916
For more information, contact Shannon Ruby at 941-338-3232

May 4, 2000
Summer Chemical Fallow Techniques using Roundup – 5:30 – 7:30 PM
Southwest Florida Research & Education Center, Immokalee
For more information, contact Gene McAvoy at 863-674-4092

May 17, 2000
Methyl Bromide Update - – 5:30 – 7:30 PM
Impact of Restrictions and Proposed Ban of Methyl Bromide on Cropping Practices and Practical Considerations for Vegetable Growers Regarding Methyl Bromide Alternatives
Southwest Florida Research & Education Center, Immokalee
For more information, contact Gene McAvoy at 863-674-4092

- May 15 –19, 2000
Aquatic Weed Control Short Course – earn up to 26 CEU’s
Fort Lauderdale Research and Education Center
3205 College Ave
Fort Lauderdale, FL 33314
For more information, contact Dr Vernon VanDiver at 954-475-4125

Web Sites:

Palm Beach County AgRegs – http://www.agregs.com – a service of the Palm Beach County Board of Commissioners – a fairly complete listing of national, state and local regulations affecting agricultural producers.

Featured Creatures - The web site of the UF/IFAS Entomology and Nematology Department and the Florida Division of Plant Industry, contains detailed information on a number of beneficial and pest arthropods. http://www.ifas.ufl.edu/~insect/ . Four new files have been added to the Featured Creatures site:
Three are on wasp parasitoids that prey on vegetable pests and the photos associated with the files, especially of the immature stages, are great. Key Word - parasitoid wasp. The fourth new file is on the imported cabbageworm, a serious vegetable insect pest.

**Pest Alert** - News releases and timely information on new and reoccurring pest problems from the University of Florida's Institute of Food and Agricultural Sciences and the Florida Department of Agriculture and Consumer Services, and its agricultural regulatory unit, the Division of Plant Industry.

[http://extlab1.entnem.ufl.edu/PestAlert/](http://extlab1.entnem.ufl.edu/PestAlert/)

**Photo Gallery of Cucurbit Foliar Diseases** – This site has some good photos and diagnostic tips for most of the more common cucurbit diseases including downy mildew, anthracnose and gummy stem blight.


**Opportunities:**

**Bell Pepper Packing Line and Irrigation Equipment**

Two Box Erectors, Slow Roll Sorting Table, Drop Roll Sizer, Six Automatic Box Fillers, Ink-Jet Printers, Lid and Glue Machines, Three Cat Electric Forklifts, One Cat LPG Forklift with 4-forks.

Six 24” out-pumps with power units, culverts, Mobile Home, IH 966 with boom mower, Land Plane, Located in SW Florida

**Call Rodney Harvey for more details 941-352-5399**

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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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