April 14, 2000

**A fairly strong cold front** passed through the area on April 5th dropping overnight temperatures into the 40’s for several nights in a row. In general, **temperatures have ranged from normal to several degrees below normal.** Daytime highs have ranged from the mid 70’s to the mid to upper 80’s, while nighttime lows have been in the 40’s, 50’s and 60’s.

**Conditions have been rather windy** on a number of days resulting in some leaf damage on a variety of crops most notably melons and greens. The wind in combination with mostly dry conditions has also resulted in fairly high evapo-transpiration rates and many growers have reported observing **plants suffering from mid–day moisture stress** on most afternoons. There have been several reports of growers having difficulty in irrigating. 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. 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, although we have seen nothing approaching the problems that we experienced last year. Growers on drip systems have generally avoided such problems.

**Overall conditions have been rather dry across the area.** The **FAWN Weather Station** in Immokalee recorded only **0.92 inches of rain** for the period, with 0.75 inches falling in association with the weather system that began affecting the area last night. The Devil’s Garden area, which had not seen any significant rainfall since last year, experienced a strong shower on April 10, which dropped upwards of an inch of rain. Rain has been falling widely across the area since yesterday afternoon. Total accumulation has been variable with most areas reporting from ¾ -1 inch since yesterday, although some areas including Devil’s Garden have received in excess of 2 ½ inches.

**Planting of most crops has been completed.** **Major vegetables harvested** during the week include potatoes, tomatoes, peppers, cabbage, cucumbers, snap beans, squash, sweet corn, eggplant and some watermelon. **Disease and insect pressure** has been fairly **light** with the exception of scattered hot spots.
Reports indicate that **worm pressure is increasing**, although outbreaks have been scattered. Most respondents indicate finding **mostly southern armyworms**, although there have been **reports of beet armyworms, loopers, and tomato fruitworms as well.** Armyworms are active in tomatoes, peppers, crucifers, cucurbits and a **number of other crops.** There have been scattered reports of “**rindworms**” in watermelon but little damage overall.

**Melonworm and pickleworms are active on cucurbits in some places.** Most respondents indicate that they have been able to remain on top of the situation and **damage has been minimal.**

**Both caterpillars attack only cucurbits.** Although the pickleworm prefers summer squash, it may severely damage cucumber and cantaloupe also. The melonworm prefers foliage of muskmelon, squash, and cucumber. It very rarely attacks watermelon.

**The pickleworm (Diaphania nitidalis)** moth has pale yellow hind wings with a wide, dark brown border and a large, pale yellow spot near the center of each dark brown forewing. A cluster of dark brush-like hairs is present on the tip of the abdomen. The newly hatched pickleworm larva is almost colorless except for slightly darker jaws and a black spot on each side of the head. Third and fourth instar larvae are about 6 to 12 mm long and pale yellow with dark spots, each spot containing a large bristle. The dark-headed fifth instar larva has a yellow-green body with no spots and may be 1 – 1 ¼ inch long.

**The melonworm (Diaphania hyalinata)** moth has a brown head and a white-tipped abdomen with bushy hair-like scales. Its white wings have a narrow dark band around the margin and span up to 43 mm. The larval stages have two dorsal white stripes running the length of the body otherwise, they resemble the pickleworm larvae can grow 1 ¼ inches long.

**The most important economic damage caused by the pickleworm is to the fruit.** Young pickleworms usually feed for a time among small leaves at the growing tips of vines or within blossoms. A favorite place is the large staminate flowers of cucurbits where larvae hide under the ring of stamens at the base of flowers. When about half grown, pickleworms normally bore into the sides of fruits or stems and continue to feed there, causing internal damage and producing soft excrement. Both young and old fruits are attacked, but they prefer young fruits before the rind has hardened. After the rind has been punctured the fruit soon becomes "sour".

**Insecticide applications should begin immediately when pickleworms or their damage appears.** More frequent applications may be needed if populations and temperatures are high. Apply in early evening to minimize bee kills.

**Application equipment that ensures good spray coverage** (hollow cone nozzle with drops and high-pressure 200+ psi) to developing fruit will improve control.

**In North Carolina, experiments in the field have shown very distinct differences in the susceptibility or resistance of squash varieties to pickleworms.** The more resistant varieties were Butternut 23, Summer Crookneck, Early Prolific Straightneck, and Early Yellow Summer Crookneck. The more susceptible varieties are Cozini, Black Zucchini, Caserta, Zucchini, Short Cocozella and Bennings Green Tint Scallop. Many other varieties tested fall between these groups.

**Thrips populations remain at fairly high levels** across the area. **Growers report** populations are requiring **continued efforts to keep them in check.** The **main thrips species** being observed are Florida flower thrips – *(Frankliniella bispinosa)*. Although thrips are being **seen widely in several crops** including tomato, pepper, eggplant and cucurbits **few major problems have been reported.**
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.

Pepper weevil numbers remain at high levels 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. Many growers are battling to remain in control of the situation.

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 to high populations of aphids continue to be reported across the area. Aphids continue to be observed in several crops including eggplant, leafy greens, melons, pepper, squash and tomato. Several growers are reporting some difficulty in obtaining satisfactory control especially on mature crops where harvest prevents the use of systemic materials.

Pinworm numbers are up in some areas. Traps counts of 15-20 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. Little fruit damage has been seen.

Spider mites are active in several crops. Several growers are experiencing problems with spider mites on eggplant, tomato, as well as melons, cucumbers and other crops. In most instances, infestations are largely confined to drier dusty areas along roads and field margins. Occurrence is sporadic and damage is low to moderate in most cases.

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

Respondents are indicating that whitefly pressure continues to increase. Populations are reaching fairly high levels in 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. Whitefly populations can develop rapidly under long days and high temperatures at this time of year.

Responses have been reporting high populations of whiteflies in pepper from several widely scattered locations. Growers are also reporting movement from pepper to adjacent tomato plantings. In general, populations remain below levels seen in previous years. Whitefly populations can develop rapidly under long days and high temperatures at this time of year.

Just when we thought they were gone until next year, several respondents have reported leaf miners in tomatoes and cucurbits. Populations are low and scattered in occurrence.

Despite increased whitefly pressure, TYLCV continues 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. Fortunately crops have reached a stage where the potential
for major problems from the disease has begun to diminish. **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 continues to be 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. Most respondents indicate that they have managed to keep the disease in check but wet weather over the next few days will provide favorable conditions for further spread of the disease. Growers are advised to apply protective fungicides.

**Early blight** (Alternaria sp.) and **target spot** has been reported on tomato. In general, **incidence and occurrence is low** although some increase has been noted in older planting where the size of the bush and harvesting is complicating control efforts.

In general, however, problems with **foliar diseases** on tomato and pepper have been **minimal.**

**There has been some localized increase in bacterial leaf spot activity on pepper and tomato.** As might be expected problems have been greatest in areas most affected by recent rains and foggy mornings. **Incidence and damage is low** and occurrence patchy. There have been a few isolated reports of bacterial speck on tomato.

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

**Powdery mildew and mosaic is widely present in squash across the area.** Incidence and damage is **variable.** Problems are generally most severe in older plantings.

**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. **Crown rot continues to affect tomatoes** in areas where fusarium has traditionally been a problem.

**Alternaria 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.**

**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.

**Field sanitation is one of the most important tactics in vegetable pest and disease management.** Remember back only a few years ago, that only by universal cooperation among growers were we able to survive the whitefly and Gemini-virus situation. The best thing 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.

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.

Weeds and volunteers should also 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 discing fields throughout the summer period to reduce weed pressure in subsequent crops. One approach uses Roundup to kill weeds during the crop free period.

The key to a successful chemical fallow program is the timing of the applications. Two Roundup Ultra treatments with one tillage trip in between should cover the entire fallow period.

Procedure

Disc field after harvest.
Allow weeds to germinate and grow to a desirable height (approximately 25-30 days).
Treat with Roundup Ultra (first treatment).
Allow treated weeds time to translocate product throughout plant (at least one week).
Lightly disk field (can be one to five weeks after herbicide treatment).
Allow weeds to germinate and regrow to a desirable height (approximately 25-30 days).
Treat with Roundup Ultra (second treatment)
Allow treated weeds time to translocate product throughout plant (at least one week).
Prepare field for planting (can be one to five weeks after herbicide treatment).

Note: Allow 3 days between last application and planting. Given the impending loss of methyl bromide, such techniques may prove valuable in some vegetable cropping systems for the control of persistent weed species such as nutsedge.
Field sanitation will be come an increasingly important tool to growers 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.

There are a number of alternatives to methyl bromide out there and growers would be well advised to start to consider these and experiment with them before the 2005 cutoff date. Supplies are already starting to get tight and prices are rising on this material. MB alternatives will certainly involve some changes in your crop management program and it would be wise to see what’s involved and how these alternatives might be successfully incorporated into your operation. Note: we have a series of growers meetings on MB alternatives planned in May – see the schedule below.

There is growing interest in the use of warm season legumes or grasses as cover crops and green manures in vegetable production. Cover crops can provide a number of benefits. They can provide a significant source of nitrogen for subsequent crops and capture nitrogen that might otherwise be lost to leaching. They can help reduce erosion, runoff, and potential pollution of surface waters. Cover crops add organic matter to the soil improving soil physical properties. They can impact insect and disease life cycles; and suppress nematode populations and weed growth. There are some drawbacks, such the additional cost of seeding and managing the cover crop, possible difficulties in incorporating the cover crop at the end of the crop cycle and resulting interference with subsequent field operations and other potential drawbacks.

Cover crops affect the economics of farming operations differently, depending on the cover crop and the cash crop. Growers need to account for the cost of cover crop seed and planting costs. Quantifiable savings can include reduced fertilizer and herbicide applications, and reduced costs of pest and disease control. Growers will have to determine how they want to account for less apparent long-term savings such as, reduced soil erosion, increased organic matter content, improved soil physical properties, reduced leaching, and enhanced nutrient cycling.

These factors must be considered in evaluating the particular cash crop and cover crop combination to be grown. The best use of cover crops will maximize the benefits without reducing the yield or quality of commercial cash crops.

The desired purpose of the cover crop will help determine the most appropriate species. If the purpose of a cover is to provide readily available, biologically-fixed N for subsequent crops, then the grower should choose a legume like cowpea or sunn hemp, which fixes nitrogen and has a low C:N ratio. If the cover crop will be managed for weed suppression, the grower might be better off with a heavy biomass producer with demonstrated weed suppression characteristics, such as sorghum-sudangrass.

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:

Cover Crops for Sustainable Vegetable Production by Debbie Roos, a former grad student at UF/IFAS is a good starting point for those who are interested in learning more about cover crops. Debbie did a great job with this site and there are a number of useful links. Visit Cover Crops for Sustainable Vegetable Production at http://www.geocities.com/RainForest/Canopy/1118/index.html.

Summer Cover Crops for Tomato Production in South Florida – Dr Yuncong Li, and Dr Herb Bryan and Teresa Olczyk looked at ten possible cover crops for potential use in tomato production at the Tropical Research and Education Center in Homestead in 1997-98 and have put the results on the web. Check it out at http://www.imok.ufl.edu/LIV/groups/cultural/cover/covercr1.htm.

The University of Florida's Pesticide Information Office has completed crop profiles for carrots, celery, citrus, ornamentals, peppers, potatoes, snap beans, strawberries, sweet corn, tomatoes and watermelons. They have been posted on the USDA Office of Pest Management Policy's Crop Profile (OPMP) Web site at http://ipmwww.ncsu.edu/opmppiap/proindex.htm. Click on Crop Profiles and then on Completed Crop Profiles by Territories/States, scroll down to Florida to see the profiles developed for Florida Crops. The site contains over 200 crop profiles have been completed by the states and territories.

Many readers may be familiar with the excellent color fact sheets on plant diseases and other fine Plant Pathology - extension publications that have been produced by the University of Florida Plant Pathology Department over the years. Unfortunately, many of these valuable documents are no longer in print. Now you can access many of these publications via the University of Florida Plant Pathology web site. The address is http://plantpath.ifas.ufl.edu – click on Extension. There are 54 publications with over 400 color plates available so far.

The results of a number of chemical and biological insecticide trials on various vegetables conducted at the SW Florida Research and Education Center in Immokalee have been posted on the SWFREC web site. Check out the entomology station reports at http://www.imok.ufl.edu/entlab/pubs/sta_rpts/sta_rpts.htm.
Stig’s Sky Calendar at http://www.skycalendar.com/ – Want to keep track of the moon’s phases - you can use the Sky Calendar to keep yourself up to date on local and global sky events. It will display sunrise/sunset, twilight and lunar phase and visibility at a glance, and also includes a Planisphere, Planet Finder and Planet Round-up display. You can even customize your sky calendar setup for your precise local. You can also download the offline version of the Sky Calendar. Do worms really peak on full moons?

The South Florida Extension Leadership in Vegetables working group targets information specific to vegetable production in south FL as defined by individual county vegetable advisory committees. This working group facilitates collaboration of county faculty, extension specialists, researchers, and clientele in a geographic area of radically diverse soils, cultural practices, crops, and large-scale commercial agriculture. Links to lots of good information and it is growing daily. http://www.imok.ufl.edu/LIV/

The Cucurbit Downy Mildew Forecast Homepage based at NCSU. This unique site indicates the occurrence of downy mildew in the United States and forecasts the trajectories of inoculum (fungus spores) from known sources. It is fascinating to see how far these spores can travel under ideal conditions. http://www.ces.ncsu.edu/depts/pp/cucurbit/

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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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