The National Weather Service has issued a...FREEZE WARNING for TONIGHT... TONIGHT will be CLEAR AND COLD with LOWS IN THE UPPER 20S TO AROUND 30. The short-term forecast calls for a warming trend over the next several days.

Although SW Florida was spared any significant crop damage resulting from a strong cold front that passed through the area on December 21st dropping temperatures to just below freezing for a brief period, growers were not as lucky when a second front plunged the mercury to well below freezing on New Years Eve and New Years day. Temperatures fell as low as 26°F in Immokalee and remained below freezing for several hours resulting in significant crop damage. Crop damage was greatest in normally colder interior and northern sections of the region. Reports indicate that in coastal areas and in warmer areas like east Naples, temperatures hovered right at freezing and growers escaped with little or no frost damage.

Sensitive crops, such as squash and cucumbers were completely lost in many locations. Older plantings of tomatoes and peppers seem to have suffered the worst, with the upper portions of the plants being frozen back six to eight inches or more. In general, younger plantings seemed to have fared the best and should grow out and produce a crop. In a number of locations, where growers were able to employ overhead sprinklers or cover crops, crops escaped with little damage.

In addition to frost, strong winds, which prevailed for most of past few weeks, have also damaged crops. The full extent of crop damage will probably become apparent over the next week to ten days.

Daytime highs for the period have ranged from the mid 50’s mid 70’s. Nighttime lows have ranged from the mid 50's, with quite a few nights dipping into the 30’ and 40’s. Low temperatures have slowed plant growth and development.

While it was inadequate to relieve the long-term drought affecting the region, many areas of southwest Florida received up to an inch of rain preceding a front that passed through the area on December 28th. The FAWN Weather Station in Immokalee received 0.80 inches of rain in this event.
Planting and picking is light and is expected to increase as growers assess losses and weather conditions improve. Crop condition is variable depending on the extent of weather related damage. Vegetables available include snap beans, cucumbers, eggplant, peppers, squash, sweet corn, tomatoes and specialty crops. The volume of vegetables available over the next few weeks is expected to be down significantly due to freeze loss.

**Immokalee Weather Summary**

<table>
<thead>
<tr>
<th>Date</th>
<th>Air Temp °F</th>
<th>Rainfall (Inches)</th>
<th>Hours Below Certain Temperature</th>
<th>(hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>40°F 45°F 50°F 55°F 60°F 65°F 70°F 75°F</td>
<td></td>
</tr>
<tr>
<td>12/19/00 – 1/3/01</td>
<td>27.2</td>
<td>79.1</td>
<td>41.5 73.5 119.1 172.8 242.1 297.7 339.2 373.7</td>
<td></td>
</tr>
<tr>
<td>Dec 2000</td>
<td>31.4</td>
<td>86.1</td>
<td>29.9 54.2 102.1 194.9 300.4 389.4 516.1 640.3</td>
<td></td>
</tr>
<tr>
<td>Dec 1999</td>
<td>36.1</td>
<td>85.5</td>
<td>13.8 47.0 88.4 128.3 183.1 349.6 525.5 634.4</td>
<td></td>
</tr>
</tbody>
</table>

The topsoil moisture index for most of the area remains short to very short. Several respondents have noted seeing signs of fertilizer salt build-up and associated crop damage in some places.

Since November 29th, the South Florida Water Management District has placed the entire area on emergency water restrictions. Restrictions vary by area:

- **Phase 3 agricultural restrictions** on the water deliveries that growers receive directly from the lake;

- **Phase 2 restrictions** for the entire lower west coast service area (Lee, Collier, Glades and Hendry counties and southwest Charlotte County); and

- **Phase 1 restrictions** for the towns surrounding Lake Okeechobee and non-agricultural users in that area.

Phase 2 restrictions affect groundwater users and are intended to cause minimal impact to agricultural users. Under phase 2, cutbacks are largely voluntary. It is hoped that voluntary reductions in water usage will help prevent mandatory restrictions at a later date.

Agricultural users dependent on the lake are under mandatory phase 3 restrictions, which will result the district releasing calculated allocations of water to users. These users may expect reductions in the amount of water available to users ranging from 25 percent to 50 percent. Growers depending on this source should note that use of water for freeze protection is prohibited unless an official freeze warning has been issued.

More detailed information about water-use restrictions is available on the District's web site at [http://www.sfwmd.gov](http://www.sfwmd.gov). Maps of the affected areas are also on the web site under "water shortage."

In addition to the announced water use restrictions, SFWMD has advised growers to check their water use permits and make sure they are up to date. The district has warned that un-permitted use of water will be dealt with severely with possible fines of up to $10,000 per day.

Cold dry conditions have held pest and disease pressure to low levels over the past few weeks.

Leafminer pressure remains at fairly high levels across the area. Crops affected include beans, leafy vegetables, peppers, potatoes, cucurbits, and tomatoes. A number of respondents have indicated that they are managing to keep the situation under control but that pressure has been constant over the past few weeks.
Growers have obtained good results with abamectin (Agri-Mek), cyromazine (Tri-gard), spinosad (Spintor) and azadirachtin (Neemix). These materials are relatively soft on beneficials. There are a number of other labeled materials that will give good control.

Several growers have indicated continuing problems with pepper weevils. Most reports indicate pressure has been fairly constant at low levels although the recent cold weather appears to have reduced numbers considerably.

A few worms are still being reported across the area. Reports indicate seeing mostly southern armyworms.

Low levels of aphids are being encountered widely across the area in a variety of crops.

Whiteflies remain at fairly low levels across SW Florida although several respondents have indicated that populations were beginning to climb in older tomato fields that are nearly finished. Cold temperatures appear to have reduced populations to some extent, although the whiteflies will probably reemerge as conditions begin to warm up.

WHITEFLY WEED HOSTS

Researchers in California have compiled a listing of weed hosts for whitefly. A partial listing describes whitefly capability to complete its lifecycle on the host plant and relative population density on the host.

<table>
<thead>
<tr>
<th>Weed</th>
<th>Complete Lifecycle</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prickly lettuce</td>
<td>yes</td>
<td>high</td>
</tr>
<tr>
<td>Spurge</td>
<td>yes</td>
<td>moderate</td>
</tr>
<tr>
<td>Annual mornnglory</td>
<td>yes</td>
<td>moderate</td>
</tr>
<tr>
<td>Prostrate pigweed</td>
<td>yes</td>
<td>high</td>
</tr>
<tr>
<td>Lambquaters</td>
<td>no</td>
<td>very low</td>
</tr>
<tr>
<td>Sowthistle</td>
<td>yes</td>
<td>high</td>
</tr>
<tr>
<td>Groundcherry</td>
<td>yes</td>
<td>very high</td>
</tr>
<tr>
<td>Nightshade</td>
<td>yes</td>
<td>low</td>
</tr>
<tr>
<td>Purslane</td>
<td>no</td>
<td>low</td>
</tr>
<tr>
<td>Nutsedges</td>
<td>no</td>
<td>very low</td>
</tr>
<tr>
<td>Bermudagrass</td>
<td>no</td>
<td>very low</td>
</tr>
</tbody>
</table>

In general, disease pressure has been low as might be expected under the dry conditions that have prevailed this season.

There have been a few reports of early blight in tomato and potato, as well as some low levels of target spot in tomato.

Scattered reports of downy mildew and powdery mildew has been noted on cantaloupes, cucumbers, squash and watermelon. In general, incidence and severity is low to moderate although in some older picked over fields both diseases are reaching serious proportions.

Several reports have indicated that fusarium crown rot is starting to increase dramatically in some locations. Some reports have indicated up to 5 % of the plants wilting in the most severely affected fields.
**Tomato yellow leaf curl virus is widely present at low levels across the area.** In most cases incidence is very low with only an occasional infected plant every few of acres present. There are a few reports where in older fields that have already been harvested where disease incidence is approaching 1%.

**Pepper Mild Mottle Virus Detected in Bell Pepper Plants in Commercial Fields in Southeast Florida**

Symptoms typical of pepper mild mottle virus were reported in two commercial bell pepper fields in southeast Florida in December 2000. Infected plants are stunted with size reduction more noticeable in younger plants. Foliar symptoms included puckering and yellow mottling and were more distinct on the younger leaves. Fruit were lumpy, mottled and slightly reduced in size. Brown streaks were observed on older fruit. Approximately 10% of the plants in one field and 20% in the second field were infected.

Identity of pepper mild mottle virus was confirmed by symptoms on indicator host plants, serological tests (ELISA) and inclusion body morphology. This virus is a member of the tobacco mosaic virus family, is readily transmitted mechanically, and is also seedborne.

**Avoidance is the best control.** Only tested seed free of pepper mild mottle virus should be planted. Once disease is present, infected fields should be worked (staked, tied or harvested) last to prevent further spread of the virus by mechanical transmission. Removal of infected plants may result in additional spread of the disease if proper sanitation procedures are not followed before handling healthy plants.

This virus was previously reported in bell pepper in southwest Florida in January 2000. The complete article can be seen on-line at the University of Florida Pest Alert website at http://extlab1.entnem.ufl.edu/pestalert/eml-1227.htm

Additional information on this virus can be found at: http://biology.anu.edu.au/Groups/MES/vide/descr599.htm

**Sanitation**

Growers are reminded of the importance of field sanitation as a component of a complete integrated pest management program. Crops in fields that have been harvested or where planting have been destroyed by freezing weather should be cleaned up as soon as possible to prevent the carry over of insect populations and disease inoculum.

**Pesticide Formulations**

The active ingredient (AI) of a pesticide is commonly prepared as a solid or liquid material so that it can be easily delivered to affect a target organism. The chemistry of an AI may determine and limit whether a pesticide product is formulated as an emulsifiable concentrate (EC or E), solution (S), or wettable powder (WP).

Safety to mixers, loaders, and applicators is weighed heavily to minimize exposure risks. Crop safety and drift or runoff hazards are also given strong consideration. The "alphabet soup" of proliferating types of formulations results from technological advances to optimize cost effective delivery of the AI to the specific target.

An EC or E is a liquid formulation where the AI is combined with a solvent(s) that allows easy mixing with water when applying the material. The solvent system may cause crop phytotoxicity or corrosion and deterioration of spray equipment.

An AI that readily dissolves in water when mixing goes into solution and does not settle out. The product may be sold as an S (liquid) or soluble powder (SP).
Many pesticides when mixed in the spray tank are extremely tiny particles (AI on mineral clays) suspended in water and require agitation. Wettable powders are finely ground dust-like formulations that are amongst the most commonly available. An improvement of the WP is the flowable (F, FL), dry flowable (DF), or water-dispersible granule (WDG) formulations.

The F or FL is a "milkshake-like" liquid containing the finely ground AI in a suspension that mixes easily with water. The DF or WDG is an advanced WP that is granular with minimal dust and mixes well in water.

A ready-to-use (RTU) formulation is another granule (G) where the AI is coated onto clay or ground nutshells or corncobs. Application of G particles requires no mixing and can be directly applied to the soil.

Water-soluble plastics allow AI’s to be incorporated or impregnated into plastic. Micro encapsulation (ME) allows AI particles or liquid to be coated inside a plastic covering. The water-soluble packet (WSP) is a plastic bag containing a pre-weighed amount of a WP that can be simply tossed into a spray tank and easily mixed with water.

**Up Coming Meetings:**

**January 11 - 12, 2001**  
**Florida Certified Crop Advisor Exam Study Workshop**  
Citrus Research & Education Center  
Lake Alfred, Florida  
Call FFAA at (863) 293-4827 to register

**January 24, 2001**  
**Production and Utilization of Composted Waste Materials to Improve Soils for Horticultural Cropping Systems**  
Tropical Research and Education Center  
18905 SW. 280 St.  
Homestead Florida  
Contact Dr Monica Ozores-Hampton at 305-246-6340

* Note the date of this workshop has been changed from January 23rd.

**February 2, 2001**  
**Florida Certified Crop Advisor Exams** (International and Southeast Regional)  
South Florida Community College  
Avon Park, Florida  
8 a.m. until 4 p.m.  
**Note:** the registration deadline for the exam was December 15, 2000

**April 22-26, 2001**  
**85th Annual Meeting of the Potato Association of America (PAA 2001)**  
St. Augustine, Florida.

Hosted by the University of Florida/IFAS Hastings Research and Education Center, the conference will provide a forum for the presentation of new scientific information, conduct business of the association and facilitate fellowship among colleagues. The conference theme is Potato Plant Health into the New Millennium. Three days of stimulating paper sessions will be kicked off with a dynamic symposium entitled, "Impact of New and Emerging Diseases and Technologies on Potato Seed Certification" co-sponsored by the Certification and Pathology Sections of the PAA. Emphasis will be on challenging soil-borne diseases.
Oral and poster abstracts are being accepted through January 10, 2001. For more information visit the conference website: http://www.ifas.ufl.edu/~conferweb/paa/ or contact the University of Florida, IFAS Office of Conferences by phone (352) 392-5930 or by fax (352) 392-9734, or by Email: mmatlock@gnv.ifas.ufl.edu

August 3, 2001

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

Web Sites:

AfriCam - Have you ever dreamt about going on safari, but don’t have the time or are finding difficulty raising the necessary funds? This site is for you – it has links to several strategically located digital cameras located in game parks throughout southern Africa. You can observe animals at waterholes half a world away. Images are updated every 30 seconds and you can easily see elephants, rhinos and the like as they come into camera range. Go to http://www.africam.co.za/

The final National Organic Standards Rule was published in the Federal Register on December 21, 2000. The rule, along with detailed fact sheets and other background information, is available on the web at http://www.ams.usda.gov/nop.

Appropriate Technology Transfer for Rural Areas (ATTRA) – has an interesting site meant to provide a basic understanding of Integrated Pest Management (IPM) for individuals interested in agriculture at all levels. It includes the steps that need to be taken prior to IPM implementation, the tools used, and some ideas about future trends for IPM. It also has a comprehensive listing of Microbial Pesticides and Microbial Pesticide Manufacturers and Suppliers. http://www.attra.org/attra-pub/ipm.html

Quote of the day: The winner of the future will be those who can develop a culture that allows them to move faster, communicate more clearly and involve everyone in an effort to serve ever more demanding customers.

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 Nychk/Nychk Bros. Farm, Chuck 0bern/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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