December 5, 2000

Cool dry conditions have persisted over Southwest Florida for the past few weeks. Skies have been mostly sunny and clear and temperatures seasonably moderate with temperatures running 1 - 5 degrees below normal.

Daytime highs for the period have ranged from a few days in the low 80’s at the beginning of the period with most highs in the mid to upper 70's since November 20th. Nighttime lows have been mostly in the 50's and 60's although a few nights have seen temperatures fall into the 40's and even the upper 30's in some locales.

A series of cold fronts on November 22 and November 27th have contributed to the general over all cooling trend. The passage of these cold fronts has kept humidity down. This has lowered leaf wetness indices below what might normally be expected at this time of year resulting in relatively low disease pressure. Growers report that windy conditions associated with the passage of these fronts has caused some amount of wind damage to sensitive crops in exposed areas. At least one location north of the Caloosahatchee reported some scattered light frost on November 22nd. Little crop damage resulted.

This fall has been abnormally dry. The entire area has gone over sixty days with most areas reporting no measurable precipitation or only a trace of rain since October 4th. The FAWN Weather Station in Immokalee has recorded a total of 0.24 inches of rain for the month of November.

The top soil moisture indices for most of the area is short to very short and growers are irrigating steadily to maintain favorable moisture conditions. Penman evapo-transpiration has varied between 0.59 and 0.123 inches per day for the past few weeks. Several respondents have indicated that they are irrigating constantly and that it is difficult to re-establish favorable soil moisture conditions after any "glitch" in irrigation schedules or equipment problems.

The extended drought is of critical concern to all vegetable producers and all agricultural interests in S Florida. Conditions have been compounded by extremely low water levels in Lake Okeechobee, low ground water levels and below normal rainfall totals over the past year or more. Many experts are calling the current drought the worst in the past 100 years and predict little or no precipitation before April or May of next year.
On November 29th, in response to the situation the South Florida Water Management District has issued emergency orders, calling for:

- **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. Growers should be aware that the typical permitted quantity of water is calculated to be sufficient for most vegetable crops under a five-year drought scenario.

Agricultural users dependent on the lake are under mandatory phase 3 restrictions which will result the district releasing calculated allocations of water to users which will result in reductions in the amount of water available to users ranging from 25 percent to 50 percent. Lake Okeechobee is already at the second or third lowest level in history and allocations will depend on rainfall and demand, which the District will calculate weekly.

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."

Growers are reporting that clear weather and mostly favorable conditions is keeping planting and harvesting operations on schedule. Most reports indicate crops in fair to good condition. Producers are gearing up to meet holiday demand. Harvesting of beans, cucumbers, eggplant, peppers, squash, sweet corn tomato, watermelon and specialty crops is underway.

**The National Weather Service extended forecast** for the next seven days is for partly to mostly cloudy skies with highs in the low to mid-70’s. Lows tonight and tomorrow will be in the 40's and 50's with a gradual warming trend predicted as we approach the weekend.

**Imnokalee Weather Summary**

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Leafminers have been the number one pest over the past few weeks. Populations are moderate to high and pressure has been constant over the past few weeks. Crops affected include beans, leafy vegetables, peppers, cucurbits, and tomatoes. A number of respondents have indicated that they have put out several applications Agrimek/TriGard over the past few weeks.

The vegetable leafminer (*Liriomyza trifolii y sativae*) larvae mine between upper and lower leaf surfaces, creating the familiar winding, whitish tunnels that are initially narrow, but then widen as the larvae grow. Heavy leafmining damage can reduce photosynthesis and cause leaf desiccation and abscission.

Liriomyzid leafminer adults are small, shiny, black flies with a bright yellow, triangular spot on the upper thorax. Eggs are white and oval and laid within the leaf. There can be many generations a year.
A number of natural enemies, primarily parasitic wasps, often control leafminers. If these parasites are killed by pesticides leafminer outbreaks may become more severe. Growers and scouts should evaluate parasite populations in considering control options. A number of respondents have indicated appreciable numbers of leafminer parasites present in fields. Growers should avoid the use of harsh chemicals to control other insects if possible to help preserve beneficial populations.

Regularly check crops for stippled leaves and leaf mines. Adult females use their ovipositor to tear holes (stipples) in upper leaf surface for feeding and laying eggs. Most mines occur on older bottom leaves. If leafminer populations build to high levels, a chemical treatment may be necessary. Action thresholds for tomato given in the Florida Tomato Scouting Guide are 0.7 larva/plant from the 0-2 true leaf stage and above the two true leaf stage 0.7-larva/3 terminal leaflets.

Several respondents have reported dramatic spikes in leafminer numbers following the harvest of snap beans in adjacent fields.

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.

A number of growers have indicated continuing problems with pepper weevils. Populations are low to moderate and reports indicate pressure has been fairly constant. Growers are spraying Vydate with fairly good results but many have indicated that they are eagerly awaiting the anticipated labeling of Actara to expand control options.

Worm pressure is light but is fairly constant according to most reports.

Growers and scouts are reporting sporadic low to moderate pressure from mostly southern armyworms. Low numbers of armyworm egg masses and adults continue to be observed indicating that continued vigilance is warranted to prevent possible crop damage.

Melonworms continue to be a problem on cantaloupe, cucumbers and squash from a number of locations at this time.

Aphids are being encountered widely across the area in a wide variety of crops.

Whiteflies remain at fairly low levels across SW Florida. A few respondents have indicated some increase in whitefly populations in older tomato including a few hotspots where numbers of up to 10 whiteflies per plant have been reported. Growers should be prepared to use alternative whitefly control measures including IGR's such as Knack and Applaud, as Admire begins to where off and whitefly populations increase.

A few isolated reports of flower thrips have been indicated in pepper and tomato. Numbers are low.

Broadmite pressure has declined sharply over the past few weeks and most growers are indicating few problems at present.

There have been a few isolated reports of spider mites mainly on eggplants.

Favorable growing conditions have mitigated against any widespread disease problems.

There are scattered reports of low levels of target spot and early blight in tomato but no reports of any significant outbreaks.
Most growers are reporting very low or non-existent new bacterial spot activity on peppers and tomatoes mainly confined to lowers leaves.

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.

Good photos and field diagnostics for downy mildew and other cucurbit foliar diseases can be seen on the North Carolina State University web site at http://www.ces.ncsu.edu/depts/pp/cucurbit/disease/disease.htm

Downy mildew inoculum is always present in southwest Florida and preventative applications of labeled fungicides are recommended.

Gummy stem blight has been noted on watermelon. Incidence and severity is low.

Scattered incidence of fusarium wilt and crown rot is being reported in tomato.

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%.

Several growers have indicated that this season, they have observed a higher incidence of potyvirus than TYLCV on tomato.

Potyviruses are aphid-vectored viruses. Use of labeled insecticides to manage aphid populations is important. The use of JMS stylet oil can help reduce transmission from infected aphids. Destruction and incorporation of infected plantings following harvest is an important cultural control measure. Reflective mulches have been shown to have some efficacy in reducing the incidence of these diseases, as has isolation of production fields using non-susceptible crops.

Several respondents have reported isolated cases of mosaic in squash and melons. Incidence is low in most fields.

Outbreak of Potato Wart Disease

Effective immediately, USDA Plant Protection and Quarantine has decided to take a temporary emergency action in response to the recent detection of potato wart, *Synchytrium endobioticum*, on Prince Edward Island, Canada. All table and seed stock potatoes from Prince Edward Island are prohibited entry. T&E shipments are allowed, following the transit procedures outlined in the PPQ Transit Guidelines dated October 19, 1998.

The USDA anticipates keeping this emergency response in effect until the results of the delimiting survey are finalized and a complete picture of this outbreak is available.

The Florida Fruit and Vegetable Association and Farm Bureau have been notified. Federal and state agencies will be monitoring potato shipments entering the state. If seed potato shipments from received from Prince Edward Island, regulatory agencies will not permit them to be planted unless they can verify they were produced in an area free of the disease. It may be that USDA will require them to be re-exported to another country.
MAXIMIZING PESTICIDE PERFORMANCE

PESTICIDES are an integral part of any farm, nursery, grove or greenhouse pest management program. At times, when pest control efforts seem to fail, pesticide resistance is blamed.

This may be the case in some situations, but there are also many other factors that can result in the poor performance of a pesticide to control target pests. These range from application equipment to techniques to water quality issues.

The net result is that there could be many factors that affect the performance of a specific pesticide, and the following 15 points may help you in improving the effectiveness of your applications.

1) WATERING PRACTICES

Watering can influence pesticide longevity and effectiveness. Overhead irrigation can wash off residues of some foliar-applied contact insecticides. Sub-irrigation does not have this effect on residues. Pesticide failure when using systemic insecticides (i.e. Marathon') occurs when too much water is applied to the soil, which moves the active ingredient below the root zone, so the plant cannot take-up the material through the roots. Over watering can also move materials below areas where soil insects are feeding.

2) WATER QUALITY

Water quality, which includes pH and alkalinity, can influence pesticide effectiveness. High pH levels can cause pesticides to breakdown (alkaline hydrolysis) especially in carbamates and organophosphates. To minimize alkaline hydrolysis, the pH spray solution should be between 5 and 7. A level of pH 6.0 is safe for most fungicides and insecticides.

To counteract pH problems, white vinegar, citrus oil, phosphoric acid or a buffering agent may be added to the spray solution. Water containing metal ions such as calcium, magnesium, and iron can also reduce pesticide effectiveness (i.e. insecticidal soaps).

3) COVERAGE

Thorough, uniform spray coverage is absolutely essential for controlling pests. Managers should determine the location of pests, then direct spray applications to these plant parts to obtain maximum pesticide effectiveness. The surfaces should be covered, not saturated - this is a waste.

For example, sprays must reach the undersides of leaves where spider mites and whiteflies are located. It is helpful to understand pest biology, so that growers are aware where certain stages are located.

4) AGITATION AND MIXING

Pesticides must be agitated and mixed constantly while in the spray tank to assure a uniform solution during the entire spray job. If agitation is stopped while traveling from the fill station to the job, the pesticide can settle out in the bottom of the spray tank. Phytotoxicity can occur to plants that are treated first if the pumps draw from the bottom of the tank, where the spray material has settled.

5) PESTICIDE INCOMPATIBILITY

Pesticide incompatibility can result in phytotoxicity and reduced potency. Be sure to consult the label to determine which materials can be mixed together.
If you are uncertain, it is a good idea to conduct a jar test for compatibility. A jar test consists of measuring 1 pint of spray water into a clear quart glass jar, then adding 1 teaspoon or 1 tablespoon depending on formulation for each pint or pound per 100 gallons of final spray mixture.

After mixing, let the solution stand for 15 minutes. Be sure to stir well. Separation or settling out indicates incompatibility. If there are still questions, call the manufacturer.

6) TIME OF APPLICATION

Pesticides should be applied early in the morning or late afternoon because this is when most insects are active. If pesticides are applied when pests are less active, there is less possibility of success, especially with contact formulations. Pesticides applied during hot, sunny days can result in rapid drying and a reduction in pest control.

Applying oils during cloudy weather conditions can result in phytotoxicity, because the material doesn't dry up, whereas oils in extreme heat tend to limit leaf transpiration: another cause of phytotoxicity.

7) RESIDUAL ACTIVITY

Some of today's newer materials have shorter residuals than older materials, which means additional applications may be necessary in order to obtain adequate pest control. Be sure to follow the label for application intervals. Older materials have longer residual activity and are also less susceptible to ultraviolet light degradation.

8) WATER TEMPERATURE

Some materials are sensitive to water temperature. For example, some neem-based products should not be mixed in cold water (less than 55°F).

Another example is Hot Pepper Wax, which needs to be mixed with warm water to be effective. Greenhouse managers using biological controls, such as beneficial nematodes, need to have water at approximately 60°F and above in order to be effective. This can be a seasonal problem as cold well water can substantially reduce nematode effectiveness.

Water temperature may also influence how rapidly water-soluble bags dissolve and release their contents to mix with water.

9) ROTATION

Failure to rotate pesticides with different modes of action can result in pesticide resistance and reduced pest control. Rotating different modes of action reduces the selection pressure and avoids exposing several generations of the pest population to the same mode of action. This helps prolong the usefulness of currently available pesticides. Knowledge of pest life cycles is also helpful in planning a rotation strategy.

Rotate between the different chemical classes (organophosphates, carbamates, and pyrethroids).

10) TARGET PEST STAGE

Pesticide failure will occur if the vulnerable stages of the pest are not present. The egg and pupal stage of many pests may not be affected a number of contact and systemic pesticides.
For example, control will be minimal if Western flower thrips egg and pupae are the predominant stages present. Young that emerge from eggs and adults that merge from pupae are not exposed to a pesticide several days following an application. This is especially true with a short residual material, so additional sprays are usually necessary.

Proper scouting can help detect the vulnerable pest stages present and then a pesticide can be applied appropriately. This maximizes the effectiveness of the pesticide. Here again, proper knowledge of pest biology and life cycles can help growers in understanding what pest stages are susceptible to pesticides, and when to schedule applications.

11) LABEL RATES

Always follow label rates to the letter. More than the recommended label rate can cause phytotoxicity to the crop and result in economic loss. Less than the label rate mixed into the tank can result in poor pest control. Following the recommended label rate will ensure success in managing pests.

12) SHELF LIFE

Pesticides don't carry a lifetime warranty. They need to be used within a specified time (approximately 2-3 years). Pesticides can break down when exposed to cycles of hot and cold. This then reduces the efficacy of the material. Liquid materials, if not used, may settle out and form precipitates in the bottom of the container. This makes it difficult to get the material back into a suspension.

Well-ventilated, cool pesticide storage will help preserve their shelf life.

13) IMPROPER PRODUCT FOR TARGET PEST

It is essential that the proper material be used on the target pest. Minimal or possibly no control may be obtained if a material is not registered for a specific pest and this could be illegal.

For example, many insecticides don't have spider-mite activity. Be sure to read the label to determine which pests the material is intended for.

14) USE PROPER APPLICATION EQUIPMENT/FORMULATION TYPE

Aerosols and fine sprays are used to control flying adults, while high-volume sprays are preferred for controlling sedentary or immobile stages and pests inhabiting the medium. If you use an aerosol to control pests that are in the soil, or deep within the crop canopy, this may result in poor control, because the droplet size is too fine.

15) USE OF SURFACTANTS

If products don't already contain a surfactant (i.e. spreader-sticker), then it may be wise to add one, as this will increase the ability of the pesticide to make contact with the pest. If no surfactant is added to the spray tank, then the pesticide droplets will land on the plant surface and tend to run off. This results in poor control. The addition of a surfactant improves the coverage effectiveness. Surfactants like spreader-stickers break the surface tension of water and this allows the material to spread out. Be sure to read the label to determine if a surfactant is needed what the manufacturer recommends.

Spray Tips by Bill Hunt of Bill Hunt Company
Up Coming Meetings:

December 9, 2000

**Suwannee Valley Field Day and Greenhouse Growers Short Course and Trade Show** - 8:00 AM - 5:00 PM
Suwanee County Agricultural Coliseum
Live Oak, Florida
Contact 904-362-1725 for more information

December 13, 2000

**Fall Vegetable Field Day** – 10:00 AM - Noon
SW Florida Research and Education Center
Hwy 29 N
Immokalee, Florida
Contact Gene McAvoy at 863-674-4092 for more information.

December 15, 2000

Registration deadline for the Florida Certified Crop Advisor Exam (CCA)
The exam is Friday, February 2, 2001.
Call FFAA at (863) 293-4827 for registration information.

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

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.

August 3, 2001

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

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**Green Cay Farm**

- Allis –Chalmers 7010 Hi Crop – clean, good running condition.
- Allis Chalmers D-19 Hi Crop - belly mounted cross ditcher, good running condition clean.
- 10’ Bush-hog/Kewaunee tandem disk – good blades.
- Signode Spirit 220V carton strapper with 20 rolls of strap.

Contact Ted Winsberg: Green Cay Farm at 561-499-5345.
Joiner & Son Farms, Inc

- 1987 38 Passenger International Bus-Diesel, $6,500.00
- 1974 Ford F700 2-Ton Flat Bed Truck, $4,500.00
- 1974 GMC C-90 Single Axle Tractor Truck 6-71 Diesel, $5,500.00
- 1991 Ford F-350 Automatic/Air Flat Bed Truck, $6,000.00
- 7- Truck mounted overhead irrigation Units w/Fiberglass Cabs, John Deere Power Units, with Cornell Pumps, 9,500 Each
- 2- 8" Hale PTO Pumps for sprinkler system, $4,500 Each
- 70 acres Wade Rain aluminum irrigation pipe/sprinklers, 6", 4", 3" with all connections, $1000 per acre
- 70 acres- 26" Rebar steel stakes, $Best Offer
- 2 Ft. Heavy Duty Double Axle Field Trailer, $1,400.00

Equipment is located in Homestead, FL, please call for appointment.

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PO Box 3420
Immokalee, FL 34143-3420
(941) 657-2312

Web Sites:

Precision Agriculture - Precision agriculture offers great promise for improving agricultural productivity and reducing the use of pesticides and other expensive inputs. This new web site features a number of units on precision ag and will help you learn more about this topic. [http://www.precisionag.org](http://www.precisionag.org)

Read the Label First - The EPA has a new web site with an interactive pesticide label. As you point to each component of the generic label (e.g. active ingredients, directions of use etc.), a pop-up screen will explain that part of the label. This could be a useful educational tool. Go to [http://www.epa.gov/pesticides/label/](http://www.epa.gov/pesticides/label/)

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