In response to a severe outbreak of *Tomato yellow leaf curl virus* (TYLCV) in the Manatee County area in spring 2006, an informal meeting was held on March 9 with local growers and Drs. Dave Schuster and Jane Polston to talk about the situation, answer questions, get feedback from growers, and try to provide the most up-to-date information to help growers make the most informed decisions possible as the season progresses and for next season. The major points of discussion and questions/answers are provided below for those who were not able to attend.

The major situation that got us into this "fix" was the fact that, while we started planting in January, we were still harvesting in February in some fields. Due to the delay in the fall crop in Immokalee as a result of hurricane Wilma, plus damage in this area, we continued picking on a good market. It's hard to argue with the market, even though most growers knew the possible consequences. In many cases, it is not the grower's decision to destroy a crop, but the owner's and their decision is often motivated more by economics. To make the situation here worse, we had a freeze that killed many of the weed hosts in the woods and field perimeters, but did not kill the tomatoes or the silverleaf whitefly (SWF). When the temperatures warmed quickly that next week, SWF migrated quickly from older plantings to the young succulent tomato plants and within about 10 days it became obvious that most of those whiteflies were carrying TYLCV. Even with old fall fields eliminated, there is still a problem with double crop situations where tomatoes were the first crop and were not completely killed before the cucurbit double crop was planted. Regrowth from these old tomato plants is often infected with TYLCV and thus serves as a source of virus which can be picked up by SWF and carried to neighboring new tomato fields. Because the second crop is often in place when this is discovered, the only option may be to hand pull the old tomato plants.

**Are we seeing an increase in adulticide resistance?** This is very possible but not confirmed. Control with the pyrethroids and endosulfan certainly is not as good as it was 15 years ago. Also, tolerance to endosulfan was indicated in laboratory trials as long ago as 15 years. No support has been provided to continue evaluating adulticides for resistance. A proposal has been submitted to EPA to expand resistance monitoring to insecticides other than the nicotinoids.
Are we seeing an increase in resistance to the nicotinoids? To test for resistance, large populations of SWF nymphs are needed and until after the freeze, SWF numbers were not that high. Last spring, SWF were as susceptible to the nicotinoids as they were in 2000. Dr. Schuster is still interested in testing for resistance if he can collect enough SWF. He is also beginning baseline monitoring for Oberon and for this he needs smaller numbers of adults, preferably from fields not yet treated with Oberon. Please give me a call if you have populations that can be tested.

What about the efficacy of Admire Pro versus Admire 2F? In studies conducted by Dr. Schuster in the spring of 2005, with a late influx of SWF, he still saw differences between the control plots and those treated with both Admire and Platinum, thus it would appear that they are still working. There was no difference between the two Admire formulations. The fact that at the time of this meeting we were seeing virtually no immatures in the field also indicates the nicotinoids are still working. The limitation is that they do not prevent primary infection.

Would cool temperatures (soil and air) slow uptake of soil applied nicotinoids? Uptake might be somewhat slower but in trials there has not been a sufficient depression of uptake to affect nymph control.

Are there any new products coming along? Not really. DuPont has a new product that has systemic activity similar to the nicotinoids, but is of a different chemistry. Growers may also want to consider the use of Oberon for adults. While most growers are trying to save Oberon because it is good on nymphs, at the field rate it also kills adults, just very slowly. In work by Dr. Schuster, 3 days after treatment, 50% of SWF were dead. When those remaining were placed on untreated plants, an additional 30% kill was achieved for a total of 80%. Again, it is just very slow. We still have Courier and Knack for nymphs, so Oberon may be a tool to consider for adult control in problem fields. Also, be sure to pay attention to the maximum rates and/or applications per season. For example, Fulfill has both a maximum rate per crop (11 oz.) and a maximum number of applications (4). Both of these requirements need to be followed. It was pointed out that Fulfill is both translaminar and translocated but it should be noted that the amount moving into the foliage that was not directly treated will be lower and control may not be as good as on leaves receiving direct spray deposit; hence the emphasis on staying as close as possible to the 7 day spray interval. It was also noted that Fulfill should not be applied with any material that will make it stay on the leaf. We want it to penetrate that leaf; thus, a penetrant is recommended.

What about Prevam and other oil products? When sprayed every week by itself, Prevam reduced nymphs significantly in the fall, but not in the spring. Why the difference? It could have been that in fall, temperatures are cooling and days are getting shorter, thus life cycles are lengthening and SWF pressure is less. This same situation may affect efficacy of other materials as well. With any oil, coverage is extremely critical. Success with oil has probably been better with transplants just out of the house or with young plants where coverage is easier. Growers may need to increase the volume of spray solution in order to achieve better coverage. In field trials, oil gave as much residual control as other, more toxic materials, although it was not highly residual.
Work done in Immokalee by Dr. Phil Stansly indicated that weekly applications of oil at 0.5% have not caused significant phytotoxicity, have provided significant SWF control and have delayed onset of TYLCV. Phytotoxicity would be more of a problem under higher temperatures seen later in the spring season or in early fall. Soap is another option for adult control.

**What about roguing? Should we rogue and when do we stop?** If the virus is coming into the field from the outside, roguing will have no effect on reducing primary infections. Roguing is only going to prevent secondary spread within the field. If SWF adults are present on the plants being rogued, it is a good idea to spray those plants with an oil or an adulticide before roguing. The same is true for any field activity that is going to disturb the plant (tying, pruning, etc.). In terms of what to do with the rogued plant, if there are immatures on the rogued plants, remove the plants from the field. If there are no immatures on the plants, this may not as critical and plants can be left in the alley ways or on the plastic to dessicate before removal.

**Is TYLCV mechanically transmitted?** No. The only means of transmission is by the SWF. TYLCV is a very unstable virus and once exposed to air is broken down quickly. Even the DNA that makes up the virus breaks down quickly. There has been some recent discussion about the ability to spread this virus via pruning or other mechanical means. This is not a virus that can be spread this way, unlike some viruses such as *Tobacco mosaic virus* or *Potato virus X*. Dr. Polston has tried to transmit TYLCV in the lab under ideal conditions and has not been successful. As she pointed out at the meeting, if it were mechanically transmitted it would make her research much easier to conduct.

Many of the plants that were pruned to remove freeze damage showed symptoms of TYLCV after growth resumed. This was not the result of mechanical inoculation. This is probably the result of a combination of several things: 1) whiteflies were coming into the field and inoculating plants while the soil temperatures were cool and plants were not actively growing, 2) pruning plants that are infected but not showing symptoms causes rapid growth and the rapid expression of symptoms if TYLCV is present (this is a trick plant virologists use to speed up symptom expression in inoculated plants), and 3) frost damage to weeds caused whiteflies to migrate into fields in search of live plants possibly bringing TYLCV with them.

**What about weed hosts for SWF or TYLCV?** Primrose willow (*Ludwigia sp.*) is a very good source of SWF on field perimeters. Spraying perimeters is not encouraged because that’s where the SWF predators are. We have not seen significant differences in virus in fields where perimeters were sprayed. We do not know the entire spectrum of weeds that serve as hosts for the virus. Additional work is needed here.

The take home message of this meeting was that at this time no one can point the finger at any single grower. Everyone played a role in this problem and the only thing that will solve it is prompt crop destruction so that we have a crop free period, especially in the winter. Does this really solve the problem?? Take a look at the situation in Immokalee. Thanks to Hurricane Wilma, they had a longer than normal crop free period and they have very little SWF or virus as this report is being written. The owners in the Manatee/Hillsborough area need to decide if they want to grow
tomatoes year round with often only half a crop. If so, then the battle will continue uphill until the Q biotype appears and then all bets are off!