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South Texas Drip Irrigation Workshop

Dr. Gary Clark from Kansas State University will be the featured speaker at the South Texas Drip Irrigation Workshop scheduled for Tuesday August 8, 1995, 8:30 a.m. -- 3:00 p.m. The workshop will be held at the Holiday Inn Civic Center at 200 W. Expressway 83, McAllen, Texas and is being sponsored by Hi-Tech Irrigation, Inc. Subjects featured in the workshop will include; characteristics of soils, estimation of crop water requirements, irrigation scheduling and water management and chemigation management. The Texas Department of Agriculture has agreed that workshop participants can earn 2 C.E.U. credits from this workshop. To register for the workshop and noon meal, please contact Hi-Tech Irrigation at (210) 781-6651.

Geminiviruses are a World-wide Concern Tom Isakeit

In June, I attended an international conference on geminiviruses in Tucson, Arizona. This conference brought together scientists to discuss what has become in recent years a serious economic problem in many countries. I gave a presentation on the squash leaf curl virus, which results in a loss to south Texas watermelon growers of \$7-14 million during the fall growing season. In Florida, the annual loss to tomato growers from the tomato mottle virus was reported as high as \$125 million.

Acreage in Pakistan affected by the cotton leaf curl virus increased from 120 in 1988 to 2 million in 1994, with losses exceeding \$1 billion. The African cassava mosaic virus is spreading through central Africa and is leading to a food shortage in some areas.

Most of the conference presentations were devoted to viruses transmitted by the B biotype of the sweetpotato whitefly (*Bemisia tabaci*). This biotype emerged in the late 1980's, along with major epidemics of geminivirus diseases. Other biotypes exist in other parts of the world. Some may have a narrow host range, such as the cassava biotype in Puerto Rico. The whitefly biotype transmitting the cotton virus in Pakistan reproduces faster than the B biotype. The use of new insecticides aided its emergence. My impression from the conference was that there was a huge reservoir of viruses in weeds and native plants just waiting to move into crop plants following the emergence of a new biotype.

Just as there is diversity in the whitefly vector, so there is diversity in the geminiviruses. A particular virus can have different strains. For example, there are two strains of squash leaf curl virus that differ in host range: narrow or broad (bean and tobacco are also infected). The presence of the broad host-range strain allows the narrow host-range strain to also have a broad host range. What the broad strain gets

out of this arrangement is not known. Different geminiviruses can also help each other out. The Texas pepper geminivirus (discovered by Dr. Ben Villalon in the Rio Grande Valley) enables the pepper huasteca virus to move within the plant. Simultaneous infection of plants with different geminiviruses can lead to the development of new viruses because their genetic material can readily mix. This phenomenon could make development of virus-resistant plants difficult.

On the whole, the outlook for control did not look promising. Progress is being made for a long-term control by using genetic engineering. Scientists had discovered a mutant replication protein of the tomato yellow leaf curl virus and were successful in obtaining transgenic tobacco plants, which could then produce this protein. Such plants were resistant to the virus. For the short term, many previously-known strategies were discussed, such as trap crops, reflective mulches, and chemical repellents. No one treatment was totally effective.

The exception was control of tomato mottle virus in Florida with the insecticide, Admire. This is because the spread of virus within a field is more important for development of this disease than the initial introduction of the virus into a field. With other geminivirus diseases, including squash leaf curl on watermelon in Texas, the initial introduction of the virus results in a high incidence of disease and no currently-available insecticide can prevent this.

The optimal control strategy would involve several methods. Measures to reduce whitefly populations would be part of the control. Dr. Walker Jones at the USDA laboratory in Weslaco spoke of research on integrated approaches to whitefly control, for example, using insecticide-resistant parasitoids and parasitoids that could be used with entomopathogenic fungi. Unfortunately, there was no breakthrough in geminivirus control presented at the conference.

Major Differences Observed in Plastic Mulch Durability **Lynn Brandenberger, Bob Wiedenfeld**

This spring's melon mulch study included eleven different plastic mulches along with two organic type mulches and a bare soil comparison. The spring melon crop has long since been harvested, but a

second fall crop will be grown on the same mulches that were installed back in December of 1994. A major aspect of this field study has been the durability of the different plastic mulches, just how well do particular plastic films stand up to our demanding South Texas conditions.

Plastic mulches in the study were rated for durability on June 30, 1995. A visual rating scale of 0 to 5 was used, where 0=bare soil no mulch present, 1=tattered mulch with >40% of a plot showing bare soil, 2=slits in the mulch, up to 5=no slits and very few holes with mulch almost completely intact. There were significant differences between the different plastic mulches in the study with average ratings ranging from a low of 1 up to a high of 4.8, (figure 1), indicating that some mulches had lost most of their integrity and others were intact and had the potential for reuse on another season's crop.

If you are interested in seeing for yourself the dramatic differences that we observed in this study feel free to contact either Lynn Brandenberger or Bob Wiedenfeld at (210) 968-5581 and we'll be glad to show you through the plots at the Texas A&M Research and Extension Center in Weslaco.

Vegetable Entomology Notes **Stormy Sparks**

Sweetpotato whitefly:

Sweetpotato whitefly has been building throughout the Valley the last several weeks. It has/will become a problem for agriculture, horticulture, and more. I got a call recently from a jogger who had run in a 5 K race and complained that everyone had difficulty breathing because of the whiteflies. The adult movement is generally heaviest in the morning and decreases as the winds pick up (This refers to whiteflies, not joggers). The populations will likely continue to increase until we get a good heavy rain across the Valley and/or defoliate cotton. The adult movement peaks every year when we defoliate cotton. We may also see a large increase as cotton fields are plowed out once the insurance situation is cleared up. Trying to grow whitefly susceptible crops between now and mid-September will prove to be a real challenge. Even so called non-susceptible hosts are likely to experience heavy adult pressure. If you must plant susceptible crops any time soon, be prepared to fight a tough battle (particularly if we do

not get some heavy wide-spread rains). Fall watermelons are of particular concern as all indications are that we will likely have severe virus problems again this year.

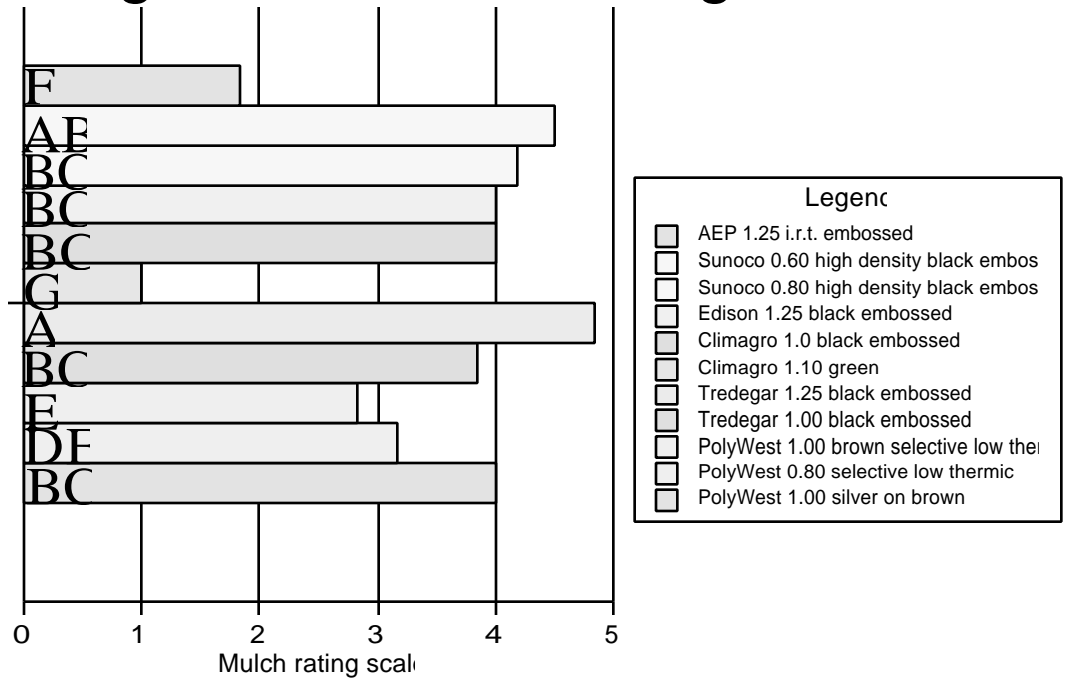
New federal labels for pyrethroids:

Commercial vegetable producers should be aware that some of the newer pyrethroids have been receiving full federal labels on a variety of crops. Examples include Baythroid on carrots, peppers, radishes and tomatoes, and Karate on broccoli, cabbage, lettuce, onions, tomatoes and peanuts. The Karate label also includes sorghum midge on grain sorghum (we just received a section 18 for asana for this same use). Overall, it appears that EPA is finally releasing the pyrethroids for expanded label request, so this whole picture could change rapidly.

Beet armyworm:

I am sure everyone knows of the beet armyworm problems in cotton in Texas (they have been found as far north as the Lubbock area). The populations appear to actually be dropping in the Rio Grande Valley, despite numerous cotton fields which are not being treated for this pest. However, there are still plenty around to provide potential invasion of fall vegetables. We hope this does not occur, but everyone should be preparing for the possibility of fighting BAW in vegetables. A section 18 request for the use of Confirm on a variety of vegetables is being prepared and hopefully will be ready if and when we need this product.

Figure 1. Mulch ratings 6/30/19



*Bars with the same letter are not statistically different.

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