

PRODUCERS LEARN AND INTERACT DURING PRODUCER'S PROBLEM SOLVING WORKSHOP: IPM

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Cooperating University Extension, State Government,
USDA-ARS units, and Producer Representatives

The IPM section of the 2001 Beltwide Crop Management Problem Solving Workshop was considered to be a successful event by the presenters, with high levels of interaction about and interest in the topics presented. The purpose of this section was to provide producers with the tools and techniques necessary to manage insects, weeds, nematodes and pathogens common to cotton production. The personnel presenting this information consisted of USDA and University IPM researchers, state Departments of Agriculture staff, Extension Specialists and cotton producers.

Insects

Several of the stations in the IPM section dealt with insect identification, sampling and control. As Dr. Larry D. Godfrey (University of California, Davis) states, "Sampling cotton arthropod pests can be time-consuming and laborious, but it is critical for making management decisions. No matter how detailed the researchers' data and results, it is of little use unless properly used by consultants, PCAs, and growers. It gets down to the human eye, patience, and comprehension to enact the data and to make informed pest management decisions. Improper decisions can be expensive, either in terms of crop losses or in unnecessary expenses for insecticide treatments. Either way, improper sampling can be expensive." Dr. Godfrey's live display showed several examples of aphid and mite sampling. Threshold information was given and participants had an opportunity to evaluate the pest population (cotton aphids and spider mites) vs. the threshold. The interactive quiz was very innovative and the results surprised most growers who usually underestimated the numbers of insects that were present.

At the same station Dr. Peter Goodell (University of California, Davis) presented material on root-knot nematode management in western cotton and on management approaches for lygus bug. Live nematodes and damaged plants were provided for study along with publications that covered the value of root-evaluation and soil sampling. An informational poster on lygus management was also presented, including information on lygus-induced square loss and plant mapping techniques.

Drs. Lorenz, Bagwell and Leonard concentrated on pest management issues of greatest concern to producers in the south. They did so with a combination of poster displays, slide presentations, and one-on-one interaction. The topics covered were aphid and other insect management, entomopathogenic fungi for aphids, cavitation and boll dangle phenomena. Photographs of actual field problems, data and recommendations were provided to demonstrate these strategies.

Insect infestations can impact producers by reducing quality, as well as yield. One of the quality challenges facing western producers is cotton lint stickiness caused by whiteflies and aphids. Dr. Steven Naranjo, USDA-ARS, Phoenix, presented an interactive display aimed at increasing awareness and understanding of cotton stickiness. He discussed potential sources of stickiness, including plant sources and honeydew producing insects, chemical and physical techniques for measuring stickiness, and ways of avoiding stickiness through management of the sources. A series of sticky cotton thermodetector assays and the associated lint were

presented so that participants could gain an appreciation of one of the common testing methods and the difficulty in determining the level of stickiness in a sample by simple touch. Producers were surprised how normal the cotton looked and felt in spite of high levels of stickiness.

Various insect control measures were discussed in the IPM section. A grower update on the progress made by the California Department of Food and Agriculture's Biological Control Program on increasing the mortality imparted by natural enemies on cotton aphid and lygus was presented by Dr. Kris Godfrey (California Department of Food and Agriculture). These programs are designed to be integrated into pest management strategies. The presentation included live specimens of two introduced cotton aphid parasites (*Aphelinus* nr. *paramali* and *Aphelinus gossypii*), one species of introduced lygus parasites (*Peristenus digoneutis*), live cotton aphids and lygus bugs, and a video showing both the cotton aphid and lygus parasites parasitizing hosts. In addition, there were posters reviewing the progress made in the projects, and a field key to cotton aphid parasites showing the differences between primary and secondary parasite adults. Dr. McGuire also showed lygus specimens infected with a pathogenic fungus that he hopes to exploit for control of this pest.

Insect control was also the subject of a booth on Cotton IPM in Arizona. Dr. Peter Ellsworth and Virginia Barkley (University of Arizona) presented a hands-on demonstration of various cotton insect pests. Sweetpotato (Silverleaf) whitefly adults and nymphs on cotton leaves were presented for identification, including information on nymphal instar identification. Microscopes and illuminators were provided for these identification activities. Diapaused pink bollworm larvae were demonstrated in cotton bolls. Damage to lint, seed and carpal walls was identified. Bt and non-Bt cotton stems were presented to demonstrate the mines or lack of mines from citrus peelminers. All stages of cotton leaf perforators were presented. A poster presentation also provided a retrospective of Arizona Cotton IPM during the past decade. This presentation included a graph of insecticide applications and costs per acre over the last decade. Major changes in IPM strategies including the implementation of IGRs (for whiteflies) and transgenic varieties (for pink bollworm control) were documented and depicted on this graph. The influence of these new technologies and their successful implementation through research and education efforts were shown.

Weeds

Ron Vargas (University of California, Davis) and Dr. Bill McCloskey (University of Arizona) were responsible for the weed management section of the IPM workshop. They provided visuals and information on general weed management programs in both California and Arizona, with the biggest emphasis on herbicide tolerant cotton production systems. Questions regarding control strategies for annual morningglory and nutsedge dominated discussions with producers. Other areas of interest that were addressed were the BXN production system as it related to Buctril rates, broadcast vs. band applications, and timing for best control and the timing and use of hooded sprayers for the application of Roundup to Roundup Ready cotton beyond the 4th leaf stage.

Diseases

Dr. Mary Olsen (The University of Arizona) used a photo display of cotton diseases to demonstrate the variety of disease problems that occur on cotton and to allow participants to take a "self test" in disease symptom recognition. Interactive dialogues on diseases throughout the cotton belt, especially in reference to new problems, were initiated.

Dr. Peter Cotty (USDA) presented materials on *Apergillus flavus* which is responsible for aflatoxin contamination of seed. This seed quality factor is of major concern in the use of seed for feed. Dr. Cotty's presentation

included a live demonstration of fluorescing fungi on cotton seed. He also discussed a major effort by the USDA and the Arizona Cotton Growers Association to register and apply atoxicogenic strains of *A. flavus* as a means of reducing or eliminating aflatoxin.

Web

Two different web sites were demonstrated at this booth. Dr. Ron Stinner and Ms. Margaret Rotstein presented the Center for IPM at North Carolina State University's Cotton Pickin' Web (www.cottoninc.com/cottonpickin/). This site provides access to unbiased information on cotton production and marketing from the state universities' extension services. The site is a cooperative effort among the cotton producing states, USDA and Cotton Incorporated. It is database-driven and contains over 1,200 sites organized by production categories. Although the focus is on extension service information, there are also links to commercial information, indicated by dollar signs. The second site presented at this booth was the Arizona Crop Information Site (ACIS) (<http://ag.arizona.edu/crops/>). Ms. Jennifer Jones (University of Arizona) demonstrated the wealth of research-based, independent information available on this site for western cotton producers on issues such as insects, weeds, diseases, crop and soil management, irrigation, variety selection and cross-commodity IPM interactions.

Interactions

The IPM section of the workshop was very well attended. The following are comments from various presenters:

"From the number of questions and comments, participation and interest seemed to be very high. In fact, it was much better than I anticipated."

"We had several members of the cotton industry briefly visit our site.. There was more interest in the photographs of actual field problems than in the data and recommendations."

"The overall response from the clientele was very positive. Offers of future cooperation were also made."

"Participants included producers, industry representatives and other cotton researchers. Many were unaware of overall issue of sticky cotton and the methods being developed for testing."

"I thought the workshop was a great success. The interest and flow through the IPM section was tremendous.There was some interest in the root-knot nematode with perhaps 30 people stopping by and asking questions. There was interest in the lygus management poster but fewer questions actually were asked. I would estimate 40-50 stopped and reviewed the information.I believe it was a tremendous success with a large information exchange. I noted that many of my contacts were with colleagues who were just arriving for the Technical Conference. This provided a great icebreaker and an opportunity to get a lot of cotton business accomplished. The workshop format provided a central mixing point for producers and researchers."