extended periods of drought during the growing season the last several years, which is favorable for spider mite development and reproduction.

A factor associated with early season spider mite infestations seems to be wild hosts either within or near fields. Delayed weed burndown greatly increases the risk for early season infestations of spider mites. If spider mites happen to be present on winter annuals and burndown is delayed, mites simply move off dying weeds onto the crop. Growers should try and have weeds dead at least 3 weeks prior to planting. Recent host plant work has found henbit to be one of the major early season hosts for spider mites. Other weeds include; honeyvine milkweed, vervain, white clover, and coneflower.

Summary

The first step in being able to reduce risk from a pest is a basic understanding of the biology and association of the pest with that crop and the environment. With some basic understanding of these concepts we can start removing requirements or introducing obstacles so that these pests are less likely to reach an economic threshold. An attempt has been made to introduce several of the factors that often play key roles in the likelihood of these pests reaching economic status in a given year. Furthermore, many of the concepts mentioned are cultural in nature, and require very little input on the part of the producer to implement, and enable the producer to minimize insecticidal inputs.

▸ Recognizing Potential Cotton Pest Problems In A Multi-Crop Environment

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Introduction

The recent increase in grain prices has motivated many producers to broaden their cropping systems to include combinations of wheat, field corn, soybean, grain sorghum, and cotton. Many southern arthropod pests infest more than one of these plant hosts and crop diversification has the potential to increase overall pest pressure and influence the costs of plant production strategies. This report will briefly illustrate examples of pests that may be influenced by crop diversity on individual farms and in local areas. In addition, several suggestions for common sense management tactics will be discussed.

Arthropod (Insects and Spider Mites) Pests and Cropping System Interactions

In many cases, the initial infestations of cotton pests do not occur across the entire field and are discovered as localized problems in specific areas. Usually these areas are associated with field borders and may be adjacent to a number of landscapes such as crops, fallow fields, pastures, woodland, WRP-CRP fields, and wetlands. There is only one arthropod pest, boll weevil, which is specific to cotton and not found attacking other crops. Infestations of other pests in cotton fields usually originate from populations in other native host areas or crop fields and immigrate to cotton fields. This event usually occurs as the result of cotton plants becoming more attractive as hosts for those specific pests than those plants where the population first originated.

Examples of cotton arthropod pests that are found in other crops are common. Thrips often develop on native winter and spring grasses or grain crops such as wheat. As wheat plants mature, high numbers of thrips migrate into adjacent cotton fields and attack seedlings. Tarnished plant bugs are often found infesting native vegetation, field corn, soybeans, and even grain sorghum fields. As these crops become unfavorable hosts, populations can migrate to adjacent cotton fields for an extended period. The corn earworm or bollworm prefers corn plants during the silking stage of development. As corn plants mature beyond this stage of development, this pest moves into cotton fields that are usually are in their reproductive stages of plant development. The fall armyworm is a migra-

tory pest that feeds on a wide range of native and crop hosts. During the late summer as those hosts mature and are no longer attractive, populations of fall armyworm often move into cotton fields and cause injury. Spider mites are active during the early spring on numerous plant hosts including corn and soybean which allows populations to increase. During favorable environmental conditions, spider mites can infest cotton fields during the early-, mid-, and late-season. The same complex of stink bugs that infests soybean also will feed on cotton. Many southern producers are producing MG IV soybeans that are harvested during August and early September. Late-season stink bugs problems have become common in many agroecosystems that include combinations of cotton and MG IV soybean. This brief list certainly does intend to include all possible arthropod pests that can be found in multi-crop environments, but should provide enough examples to justify the importance of the potential interactions and effects on cotton IPM strategies.

Considerations for Pest Management Tactics

Producers and scientists have recognized for many years that crop production practices and the local environment within and around cotton fields can have significant effects on the development of pest problems, and require an adjustment in pest management strategies. More costly pest problems do not always occur in each and every instance, but producers and agricultural consultants should be aware of the potential for these effects, and be prepared to modify their pest control tactics. Several suggestions for managing cotton pests in fields associated with multi-crop landscapes are listed below.

- Establish field plans for crops well-in-advance of planting after considering the implications of emigrating pests. Provide this information to your agricultural consultant for review and obtain his suggestions to minimize pest problems.
- Producers should attempt to plant the same crop across an entire field or in groups of fields. This strategy will minimize the number and length of border areas between cotton fields and other crops that may provide a source of emigrating arthropod pests.
- Effective control of late-winter and early-spring vegetation across all fields on a farm can reduce overwintering pest populations before the crop is planted. Producers should use tillage or herbicide combinations to completely destroy all weeds in fields. Well-timed herbicide use strategies can reduce alternate host availability, suppress pest population development, or delay emigration into adjacent cotton fields.
- If a pest problem is identified in an adjacent field, increase the frequency of scouting cotton fields along the border areas. Early detection of pests and the timely application of the appropriate control tactics can be important to reduce the overall seasonal injury potential and costs of pest management. Do not apply preventative treatments and use established action thresholds for applications of pesticides.
- Crops such as wheat and field corn are usually actively growing at the time cotton is being planted. Recognize the potential of thrips immigrating to adjacent cotton fields. Producers should consider using a soil insecticide such as Temik 15G or insecticide-treated seed to reduce the impact of thrips injury to cotton seedlings. As wheat matures, high numbers of thrips may migrate to adjacent cotton fields. If this immigration occurs after the residual efficacy of the insecticide has decayed, supplemental foliar insecticide applications may be necessary.
- If pest populations are detected in localized areas along cotton field borders, apply pesticide treatments only to those areas of fields where infestations are located, especially during the early to mid-season. Treating only isolated portions of fields reduces control costs without sacrificing yields.
- During the mid-to-late season, producers and agricultural consultants should monitor all crops on a farm. Allowing pest populations to increase in one crop, even if that crop is already mature and no economic injury is occurring, can provide a source of infestation to adjacent fields. Usually late-season emigrating populations are very heavy and may persist for an extended period. This may result in multiple pesticide applications at frequent intervals.
- Be aware of differences in pesticide labels among different crops. Although the same pest may infest and injure several crops, pesticides are not universally labeled across all

crops. Using non-labeled pesticides is illegal and could cause crop phytotoxicity and yield loss to occur.

● Destroy all post-harvest crop residue and weedy vegetation to eliminate overwintering quarters for pests and subsequently build populations during the fall.

● Double-cropping cotton after winter wheat should be given special consideration due to the delay in planting, crop development, and eventual harvest. The double-cropped fields remain attractive to arthropod pests after most other local cotton fields have reached harvest maturity. An "island" effect is created in which many of the pests in that area funnel into the attractive double-cropped fields. In some instances, persistent and high populations can occur and require numerous and costly pesticide applications to obtain satisfactory control. The same concerns also exist for any late-planted cotton fields.

Summary

Southern agriculture will continue to evolve with annual fluctuations in the value of all available crops. Successful producers will capitalize on the profitability and stability of multi-cropping systems. This change to multi-crop production systems will also influence the diversity and severity of arthropod pest problems. A "common-sense" approach to pest management strategies is necessary to optimize farm income from cotton, as well as other crops. Agricultural consultants and producers are forewarned to recognize the direct relationships of cotton pest problems and specific plant hosts in multi-crop production systems and to adjust their pest control tactics accordingly.

▸ Performance Of New Cotton Varieties In The North Delta

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The release of cotton varieties with the latest biotechnology traits has researchers and p roducers scrambling to find varieties that perform as well as first generation biotechnolog y trait varieties. Beyond obvious yield goal, intangible benefits of these new technologies are driving their adoption. The increased flexibility for weed management and the ability t o use a natural refuge with Roundup Ready Flex and two gene Bt traits has producers look ing towards these new varieties for time savings and reductions in input costs. In this pres entation we investigate the performance of recently released cotton varieties in the North Delta states of Arkansas, Missouri, and Tennessee.

Table 1. Top ten varieties in Arkansas and Tennessee OVT's for 2005, 2006, and 2007.

	Arkansas			Tennessee			
Rank	2005	2006	2007	2005	2006	2007'A'	2007'B'
1	PHY 310R	DP 117B2RF	PHY 370WR	DP 432RR	ST 5599BR	DP 444BG/RR	DP 444BG/RR
2	DP 393	ST 4664RF	DP 454BG/RR	ST 5599BR	ST 5242BR	PHY 375WRF	ST 5599BR
3	DP 432RR	ST 5599BR	DP 515BG/RR	ST4575BR	PHY 370WR	DP 445BG/RR	PHY 370WR
4	DP 445BG/RR	DP 147RF	PHY 310R	ST 5242BR	DP 432RR	ST 4498B2RF	ST 5327B2RF
5	DP 434RR	PHY 425RF	FM 1900LL	ST 4554B2RF	ST 4427B2RF	ST 5599BR	DP 432 RR
6	ST 4892R	DP 143B2RF	ST 5242BR	ST 4686R	FM 960BR	ST 5242BR	CG 3220B2RF
7	DX 25105N	DP 444BG/RR	DP 445BG/RR	DP 444BG/RR	PHY 425RF	ST 4427B2RF	AMX 1550B2RF
8	DP 455BG/RR	DG 2520B2RF	PHY 485WRF	ST 4664RF	ST 5327B2RF	PHY 310R	DP 161B2RF
9	ST 4575BR	CG 3520B2RF	ST 5599BR	BW 4630B2RF	DP 444BG/RR	PHY 370WR	ST 4596B2RF
10	ST 4686R	DP 164B2RF	DP 117B2RF	STX 416B2RF	DP 147RF	ST 4554B2RF	DP 515BG/RR

Table 2. Top ten varieties in Missouri OVT's for 2005, 2006, and 2007.

	Missouri					
Rank	2005	2006	2007 Senath	2007 Sikeston	2007 Delta RR	2007 Delta Clay
1	DX 25105N	DP 445BG/RR	ST 4498B2RF	DP 455BG/RR	PHY 315RF	ST 4498B2RF
2	DP 445BG/RR	PHY 370WR	DP 174RF	FM 9058F	ST 5242BR	DP 117B2RF
3	ST 4554B2RF	DP 117B2RF	ST 4664RF	ST 5458B2RF	PHY 375WRF	ST 5242BR
4	ST 4575BR	ST 5242BR	PHY 315RF	ST 5242BR	ST 5283RF	ST 4427B2RF
5	XBCG1404	DP 434RR	AMX 1550B2RF	ST 4664RF	ST 4664RF	DP 174RF
6	ST 4664RF	ST 5599BR	ST 5458B2RF	FM 9060F	PHY 370WR	ST 5458B2RF
7	ST 5599BR	PHY 310R	ST 5283RF	FM 1740B2F	PHY 310R	FM 1740B2RF
8	CX621	DP 444BG/RR	DG 2383B2RF	ST 4498B2RF	CG 3220B2RF	PHY 310R
9	PHY 310R	FM 966LL	ST 4427B2RF	FM 958LL	CG 3035B2RF	ST 4678B2RF
10	ST 4686R	DG 2490B2RF	ST 4357B2RF	DP 164B2RF	DP 432RR	CG 3035B2RF