

Louisiana Cotton Bulletin

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ARTICLES THIS ISSUE

Crop Report

Dr. Donald Boquet, Jack and Henrietta Jones Endowed Professor of Agronomy and Interim Cotton Specialistp. 1

Foliar-Applied Fungicides in Cotton

Dr. Boyd Padgett, Extension Specialist and Professor of Plant Pathology.....p. 2

Upcoming Events and Field Days p. 5

List of LSU AgCenter Cotton Personnelp. 6

LSU AgCenter Cotton Research and Extension

Crop Report, June 22, 2009

Donald J. Boquet, PhD

Up until this week the Louisiana cotton crop, although variable in growth stage, was in good to excellent condition with potential for a very good crop, and this is still true for the irrigated cotton. The situation is rapidly changing, however, for non-irrigated cotton fields.



Soil moisture is running out, having received no rain for 20 days with higher than usual temperatures. Hot and dry conditions are forecasted with little chance of rain for at least 10 days. With some cotton fields flowering, dryland cotton will have a difficult time setting and maintaining bolls. The evapotranspiration rate is very high this week, between 0.25 and 0.3 inches per day. Irrigation systems will be stretched to the limit to provide the two inches of water per week the cotton crop will need. The cotton plants are conserving water by closing stomata during the hottest part of the day and developing thicker leaf cuticles. This process conserves water but will greatly reduce the efficiency of photosynthesis and the ability of plants to support bolls. Accumulation of DD60s over the next 10 days will be well above what the cotton plants can effectively use, averaging more than 26 per day. As mentioned in previous newsletters, the maximum usable DD60s are about 22 per day. Temperatures above 90 degrees speed up plant development but add stresses to the cotton crop, especially if water is limited. The total number of DD60s since April 15 has now surpassed 1000 in all areas of the state. Cotton will reach the first flower growth stage after receiving about 900 to 950 DDs, so many of the state's early planted cotton fields are at or past initial flowering.

Louisiana Cotton Bulletin

Foliar-applied Fungicides in Cotton

Boyd Padgett, PhD

Louisiana cotton can be affected by several late-season foliar diseases and also by boll rots (Figures 1 and 2). Foliar diseases seldom have an adverse affect on yield, but, when severe, boll rots can reduce yield and quality. In most years these diseases either do not develop, or initiate late season and do not impact yield and quality. Foliar diseases can be associated with environmental stress or nutrient stress. Boll rot usually requires specific conditions such as high temperatures, canopy humidity above 95%, shade, and periods of free moisture from rain, irrigation or morning dew. Dense canopies are obviously a factor that contribute to conditions promoting boll rot development. Boll rot has many different causal organisms, primarily fungi, but some bacterial that are usually vectored by insects. Economic control of boll rots with chemicals is therefore difficult because of the many species of organisms involved and because of the long period of time that bolls are susceptible to infection. Research during the 1970s through the 1990s did not find consistent yield increases or economic returns from applications of fungicides for foliar diseases or boll rot control.

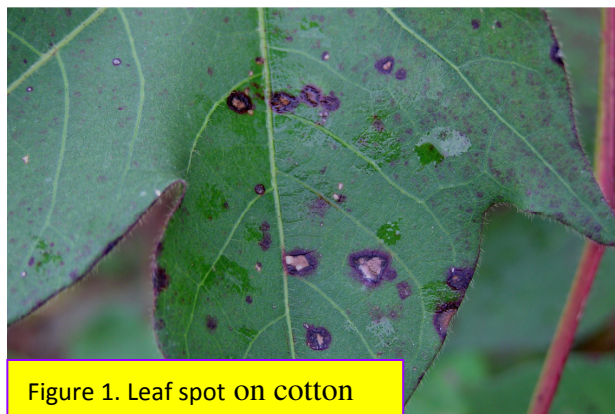


Figure 1. Leaf spot on cotton



Figure 2. Boll rot

Louisiana Cotton Bulletin

Recently, some of the newer foliar-applied fungicides were evaluated by LSU AgCenter personnel to determine their potential to control foliar and boll rot diseases in cotton. Fungicides were evaluated for their efficacy on disease development and effect on fiber yield and quality. During 2005 through 2008, Quadris 2.08SC[®] and Headline 2.09EC[®] were applied at several rates and timings as shown in the following tables. First applications were initiated at flowering and subsequent applications were made 10, 14, 21, or 28 days later. Cotton was monitored for disease development (foliar and hardlock/boll rot) throughout the growing season and were quantified just prior to harvest. After defoliation, percent hardlock and boll rot was quantified for each treatment. Cotton was harvested to determine the impact of fungicides on fiber yield and quality.

The results from these studies are shown below (Tables 2-5). In general, fungicides did not reduce disease severity or improve cotton yield performance over the non-treated cotton. We concluded that, as with previous studies, applications of foliar fungicides in our recent studies did not produce positive economic returns and, therefore, fungicides are not recommended to control foliar diseases or boll rot in Louisiana.

Table 1. Gallons per acre and nozzle type for fungicide applications in tests conducted from 2005 to 2008.

| Year | Gallons/Acre | Nozzle Type |
|-------------|---------------------|--------------------|
| 2005 | 15.9 | Fan |
| 2006 | 15.9 | Fan |
| 2007 | 11.5 – 15.9 | ULD or Fan |
| 2008 | 10-13 | Fan |

Louisiana Cotton Bulletin

Table 2. Percent foliar disease and seed cotton in cotton treated with Quadris 2.08SC, Macon Ridge Research Station, Winnsboro, 2005

| Treatment (fl oz/A) ¹ | Percent Foliar Disease ² | Yield (lb SC/A) ³ |
|----------------------------------|-------------------------------------|------------------------------|
| Pix (8) | 65 | 2543 |
| Pix (8) + Quadris (6) | 37 | 2547 |
| Quadris (6) | 66 | 2652 |
| Pix (8) + Quadris (9) | 33 | 2906 |
| Quadris (9) | 56 | 2561 |
| LSD (P=0.05) | 30 | NS ⁴ |

¹Treatments were applied at first flower and 14 days later.

²Percent of the foliage with leaf spots. ³SC=seed cotton.

⁴Differences among average values for percent foliar disease and yield are not statistically significant.

Table 3. Foliar disease incidence and severity and seed cotton yield in cotton treated with Quadris 2.08SC, Macon Ridge Research Station, Winnsboro, 2007

| Treatment (fl oz/A) ¹ | Percent Foliar Disease ² | | Yield (lb SC/A) ³ |
|----------------------------------|-------------------------------------|-----------------|------------------------------|
| | Incidence | Severity | |
| Pix (8) | 100 | 12.5 | 2764 |
| Pix (8) + Quadris (6) | 100 | 11.3 | 2910 |
| Pix (8) + Quadris (9) | 100 | 17.5 | 2966 |
| LSD (P=0.05) | NS ⁴ | NS ⁴ | NS ⁴ |

¹Treatments were applied at first flower and 28 days later.

²Percent of the foliage with leaf spots.

³SC=seed cotton.

⁴NS, Differences among average values for incidence, severity and yield are not statistically significant.

Louisiana Cotton Bulletin

Table 4. Foliar disease incidence and severity and seed cotton yield in cotton treated with Headline 2.09EC, Macon Ridge Research Station, Winnsboro, 2007

| Treatment (fl oz/A) | Application Timing ¹ | % Disease Severity ² | Yield (lb SC/A) ³ |
|---------------------|---------------------------------|---------------------------------|------------------------------|
| Non-sprayed Control | -- | 8.8 | 2758 |
| Headline (6) | A | 5.0 | 2919 |
| Headline (6) | B | 6.8 | 2850 |
| Headline (6) | AB | 4.0 | 3077 |
| LSD (P=0.05) | | NS ⁴ | NS ⁴ |

¹A=14 days after first flower, B=28 days after first flower.

²Percent of the foliage with leaf spots.

³SC=seed cotton.

⁴NS, Differences among average disease severity and yield are not statistically significant.

Table 5. Foliar disease incidence and severity and seed cotton yield in cotton treated with Headline 2.09EC, Macon Ridge Research Station, Winnsboro, 2008

| Treatment (fl oz/A) | Application Timing ¹ | % Disease Severity ² | % Hardlock | % Boll Rot | Yield (lb SC/A) ³ |
|---------------------|---------------------------------|---------------------------------|------------|-----------------|------------------------------|
| Non-sprayed Control | -- | 12.5 | 29.7 | 2.5 | 1708 |
| Headline (6) | B | 10.0 | 40.7 | 2.4 | 1869 |
| Headline (6) | D | 17.5 | 31.1 | 1.1 | 1840 |
| Quadris (6) | AC | 13.8 | 32.1 | 2.2 | 1679 |
| Quadris (6) | C | 10.0 | 40.8 | 2.2 | 1888 |
| Quadris (6) | C | 12.5 | 38.5 | 2.4 | 1763 |
| LSD (P=0.05) | | 6.1 | 11.3 | NS ⁴ | NS ⁴ |

¹A=First flower, B=10 days after first flower, C=14 days after first flower, D=24 days after first flower.

²Percent of the foliage with leaf spots.

³SC=seed cotton.

⁴NS, Differences among average disease severity, hardlock, boll rot and yield are not statistically significant.

Suggested Reading

Guidelines for Plant Growth Regulator Use on Louisiana Cotton – AgCenter Publication 2918, or online at www.lsuagcenter.com/cotton in the Cotton Publications section

Upcoming Events

Concordia Field Day Tour – July 14, 2009

Contact Glen Daniels for information – 318-336-5315

gdaniels@agcenter.lsu.edu

Master Farmer Field Day – July 14, 2009

Scott Wiggers Farm

Contact Donna Morgan for information – 318-613-9278

dsmorgan@agcenter.lsu.edu

Dean Lee Research and Extension Field Day – August 20, 2009

Contact Danny Coombs for information – 318-473-6528

dcoombs@agcenter.lsu.edu

Below is a list of contacts, parish and area field agents and state extension specialists. They are prepared to assist you with any questions or problems you have.

| COTTON FIELD AGENTS | | | |
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| PARISH | AGENT | PHONE | EMAIL |
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| | Daniel Stephenson | 318-473-6590 318-308-72259(cell) | dstephenson@agcenter.lsu.edu |
| | Donnie Miller | 318-766-4607 | dmiller@agcenter.lsu.edu |
| Entomology Specialist | Roger Leonard | 318-435-2157 318-334-0147(cell) | rleonard@agcenter.lsu.edu |
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