PROCEEDINGS OF THE 2000
COTTON RESEARCH MEETING
AND
SUMMARIES OF COTTON
RESEARCH IN PROGRESS

Edited by Derrick M. Oosterhuis

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The 1999 cropping season was one of the most stressful and disappointing in recent history. The extremely hot, dry weather experienced during the boll development period resulted in an average state yield of 715 lb lint per acre from 970,000 acres. Lint quality was also a little disappointing with trends toward short fiber and high micronaire. However, insect pressures were not as high as expected.

The season began with good crop development up to flowering, and producers were optimistic for high yields. However, extremely hot, dry conditions during July and early August (see Fig. 1) affected boll growth, particularly seed and fiber development, so that low yields resulted despite good management efforts. Irrigation only partially offset the extreme heat and excessively dry conditions. Although cotton originates from hot climates, it does not grow best at excessively high temperatures. Reports in Arkansas indicate that across years high average temperatures are associated with low yield and low temperatures with high yields. The ideal temperature range for cotton is reported to be from 68 to 86°F. However, from a physiological point of view, the ideal temperature range for cotton for optimal metabolic activity is 74-90°F with the optimum for photosynthesis at 82°F. Average daily maximum temperatures in July and August in the Mississippi Delta are usually above 90°F, i.e. above the optimum for photosynthesis.

There are no obvious immediate remedies to the problems associated with high temperature. Suggestions include genetic selection for cultivars more tolerant to high temperatures during boll development. Crop management should focus on producing an early crop (e.g. effective and timely insect and weed control, attention to water availability, and judicious fertility) by using an effective crop monitoring system, i.e. COTMAN. Plant growth regulators should be used to enhance early fruit set and early maturity. However, in spite of best management efforts, the occurrence of untimely severe weather, coupled with insect attacks, can still adversely affect cotton growth and yield.
Cotton yields in Arkansas increased steadily during the eighties, but in recent years there has been a leveling off and possibly even a decrease in yield. Of more significance, however, is that the last five years have provided extreme year-to-year variability in yields which is a major point of concern with cotton producers. Yield stability for Arkansas cotton producers has become a major focus for new in-state collaborative research projects.

Figure. 1. Weekly maximum and minimum temperatures and rainfall for 1999 compared with 37-year averages at Rohwer, Southeast Arkansas.
The University of Arkansas Cotton Group is composed of a steering committee and three sub-committees representing production, genetics and pest management. The group contains the appropriate representatives in all the major disciplines as well as representatives from the Cooperative Extension Service, the Farm Bureau, the Agricultural Council of Arkansas, and the State Cotton Support Committee.

The objective of the Arkansas Cotton Group is to coordinate efforts to improve cotton production and keep Arkansas producers abreast of all new developments in research.

**Steering Committee:** Fred Bourland, Gus Lorenz, Gene Martin, Keith Martin, Robert McGinnis, Derrick Oosterhuis (Chm.), Don Plunkett, Bill Robertson, Craig Rothrock, Mac Stewart, Cecil Williams, David Wildy, Jerry Williams

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COTTON INCORPORATED AND THE ARKANSAS STATE SUPPORT COMMITTEE

The 2000 Proceedings of the Arkansas Cotton Research Meeting has been published with funds supplied by the Arkansas State Support Committee of Cotton Incorporated.

The principal purpose of Cotton Incorporated is to increase the profitability of cotton production by building demand for U.S. cotton. The Arkansas State Support Committee of Cotton Incorporated is a board whose voting members are cotton growers from Arkansas. Advisory members include representatives of Arkansas’ certified producer organizations, the University of Arkansas, the Cotton Board and Cotton Incorporated. Five percent of Cotton Incorporated’s total budget is allocated for research and promotion activities, as determined by the State Support Committees of the cotton producing states. The sum allotted to Arkansas’ State Support Committee is proportional to Arkansas’ contribution to the total U.S. cotton fiber production and value in the five years previous to the budget.

The Cotton Research and Promotion Act is a federal marketing law. The objective of the act is to develop a program for building demand and markets for cotton. The Cotton Board, based in Memphis, Tennessee, was created to administer the act and empowered to contract with an organization with the capacity to develop such a program. Cotton Incorporated, with its world headquarters and research center in Cary, North Carolina, is the contracting agency. Cotton Incorporated also maintains offices in Basel, Switzerland; Osaka, Japan; Mexico City, Mexico; Shanghai, China; and Singapore to foster international sales. Both the Cotton Board and Cotton Incorporated are non-profit entities, with governing boards comprised of cotton growers and cotton importers. The budgets of both organizations are annually reviewed and approved by the U.S. Secretary of Agriculture.

Cotton production research is supported in Arkansas both by Cotton Incorporated directly from its national budget and by the Arkansas State Support Committee from its formula funds. Several of the projects described in these proceedings, including the publication of these Proceedings, are supported wholly or in part by these means.
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<td>---</td>
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<tr>
<td>Cotton graduate student award</td>
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<td>Natural enemies</td>
<td>Kring</td>
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<td>New Stress Index</td>
<td>Tugwell</td>
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<td>Oosterhuis</td>
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<td>New Petiole Sampling</td>
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<tr>
<td>Plant Bug Feeding</td>
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<td><strong>Totals:</strong></td>
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<td>276,000</td>
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<td>283,500</td>
<td>267,000</td>
<td>281,356</td>
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Proceedings of a Conference held at the
Phillips County Community College, Helena
February 15, 2000