Evaluation of Irrigation Termination Effects on Fiber Micronaire and Yield of Upland Cotton, 2000-2002

J.C. Silvertooth and A. Galadima

Abstract

Arizona has experienced a trend of increasing fiber micronaire values in recent years resulting in substantial discounts on fiber value. There is some evidence to suggest that irrigation termination (IT) management can influence fiber micronaire. Field studies were conducted in 2000, 2001, and 2002 at the University of Arizona Maricopa Agricultural Center (1,175ft. elevation) and in 2001 and 2002 at the Yuma Valley Agricultural Center (YVAC; 150 ft. elevation) to evaluate the effects of three dates of irrigation termination on the yield and fiber micronaire of several Upland cotton varieties. Three dates of irrigation termination (IT1, IT2, and IT3) were imposed based upon crop development into cutout. The earliest irrigation termination date, IT1 was made slightly ahead of an optimum date to provide sufficient soil-water such that bolls set at the end of the first fruiting cycle would not be water stressed and could be fully matured. Thus, the IT1 date was imposed to try to reduce overall micronaire. The second termination (IT2) date received one additional irrigation over an optimal point for the completion of the first cycle fruit set and two irrigations beyond IT1. The final (IT3) date (late September) was imposed so that soil moisture would be sufficient for the development of bolls set up through the last week of September, thus providing full top-crop potential. In general, lint yield and micronaire results revealed significant differences among the IT treatments. Micronaire and lint yield values consistently increased with later IT dates.

Introduction

One of the advantages associated with a cotton (Gossypium spp.) production system in an irrigated desert region such as Arizona, is the availability of a relatively long growing season, or a reliable supply of abundant heat units (HU). Traditionally, cotton production systems in the low (elevation) desert regions of Arizona (<2,000 ft. above sea level) have employed a long, full season approach. Such a long, full season approach would commonly involve a February or March date of planting with final irrigations being applied in September or October (depending on local conditions). Production over this period would include a completion of the first, or primary fruiting cycle, a cutout period (hiatus in blooming), followed by a second fruiting cycle or top-crop. Accordingly, long season, indeterminate varieties were usually best suited to this type of production system. This is one of the reasons that Pima (G. barbadense L.) has been well adapted to this region.

Overall, the objective with a reduced season approach to cotton production in the irrigated southwest is to achieve the highest degree of efficiency and profit to the grower as possible. To do so requires an identification of the point of diminishing returns with respect to a cotton crop. This is based on the assumption that yield potentials decline with time in the later stages of the growing season due to natural crop senescence, shorter day lengths, and cooler weather conditions (lower rates of HU accumulations).

This is a part of the 2003 Arizona Cotton Report, The University of Arizona College of Agriculture and Life Sciences, index at http://cals.arizona.edu/pubs/crops/az1312
Recent research in Arizona has attempted to address this issue by comparing a reduced season approach to that of a more traditional long, or full season system (Silvertooth et al., 1989; Silvertooth et al., 1990; Silvertooth et al., 1991; Silvertooth et al., 1992; and Silvertough et al., 1993; Silvertough et al., 1994; Unruh et al., 1995; Silvertough and Norton, 1996; and Silvertough and Norton, 1997). Summarizing this work, Unruh and Silvertough (1997) reported on 12 site-years of data in Arizona comparing various planting and irrigation termination date combinations. The overall results from these studies revealed a most pronounced improvement in yield from an early date of planting and a generally small increase in yield from a late irrigation termination date. Comparing early and late IT treatments with an early date of planting, Unruh and Silvertough (1997) found an average increase of 83 and 118 lbs. of lint/acre for DPL 90 and Pima S-6, respectively. Large increases in lint yield from a later IT were observed in a few experiments, but usually under conditions of very poor fruit retention over the primary fruiting cycle (up to cut-out).

About 600 HU (86/55 °F thresholds) are required to develop a late season boll from a bloom to a full sized, hard boll when fiber length development is complete (Silvertough et al., 1996). Approximately 400 additional HU are then required to complete boll maturation and opening, for a total of 1,000 HUs needed for boll development from bloom to open boll. Therefore, IT treatments are best structured to accommodate development of bolls intended for harvest to the point of full fiber development (600 HU post-anthesis). This commonly translates to a period of approximately 21 days in southern Arizona in August and September. Accordingly, adequate soil moisture must be maintained throughout this three-week period for the last set of bolls intended for harvest. The exact IT date will therefore vary depending upon soil water holding capacities, amounts of water applied per irrigation, weather conditions, and crop condition. For example, if bolls set up to the point of cut-out are designated as those intended for harvest, final irrigations should be made so that adequate soil moisture is maintained for a three week (600 HU) period beyond the time of cut-out. The development of a top-crop usually requires irrigation and pest control for four to six weeks beyond cut-out, which for many systems equates to approximately one extra acre-foot of irrigation water and appropriate pest control to protect the developing fruit load.

In recent years an increasing percentage of the Upland (G. hirsutum L.) cotton crop in Arizona has been classified with micronaire (mic) ranges in excess of 4.9, resulting in a discount of the market value of the fiber. In 1999, slightly over 40% of the Arizona Upland cotton crop was classed with mic values greater than 4.9. For example, Group 6 mic values (5.0-5.2) can result in $0.05/lb. discounts and Group 7 (>5.3) $0.10/lb. discounts. With low market values of cotton lint, as have been experienced recently (i.e. ~ $0.50/lb. or less), discounts of this magnitude can have a devastating impact on farm revenues. Some economists have estimated that this problem has resulted in a loss of revenue to the Arizona cotton producers of approximately $13 to 15 million per year in the past several years. However, some cotton marketing professionals in Arizona have indicated that they believe these losses in revenue due to high micronaire are in the range of $20 to 25 million per year over the past four to five years. Thus, high micronaire is substantially reducing the profitability of Arizona cotton production in recent years.

Strategies to reduce micronaire in Arizona must consider three primary factors: 1) genetics, 2) environment, and 3) management. These three factors form a complex set of effects and interactions that determine the micronaire of a crop. The degree of genetic influence on micronaire depends on the different types of varieties that are adapted to the region in question and the range of environmental conditions within that region. The statement is often made that "only 30% of the cotton micronaire properties are determined by genetics (variety) with 70% determined by agronomic management." University of Arizona variety trial data from 1996 through 1999 indicate that about 20% of the variation in micronaire in central Arizona was due to the genetic control of the varieties in those tests. In comparison, variation due to varieties was 50% for fiber strength, 36% for fiber length and 17% for lint yield. These data show that the environment and management exert more influence on micronaire than other fiber properties, so no matter what variety is chosen, growers can, and probably will, see wide variations in micronaire values from field to field and year to year. There remains a strong genetic component, however, the average micronaire can be reduced through proper varietal selection.

The relationship between varieties and micronaire is also complicated by the fact that high yield is genetically related to high micronaire. With our current genetic resources, the higher yielding varieties also tend to produce higher micronaire as well. This relationship between yield and micronaire is probably a
strong contributing factor to the trends we have observed in micronaire over the last few years. In Arizona, we have seen a slight increase in average mic values in the early 1990’s (~1993) and again in about 1996. A similar trend is apparent with data from the entire U.S. cotton belt. Also, in review of the mic distributions among all cotton producing regions in the U.S., there is a somewhat normal distribution pattern with a peak mic value at approximately 4.9 - 5.0 and distinct drop above 5.0. These two points support the hypothesis that there is a strong genetic component associated with recent trends in Arizona and U.S. mic values and that varieties have been developed to "push" the mic limits (i.e. 5.0).

There is also ample evidence to support the position that Arizona, particularly the low elevation locations (< 2,000 ft.), has a hot environment with abundant sunlight that is conducive to high micronaire production (with hot conditions for both day and night temperatures). Thus, it appears that in Arizona we are producing a cotton crop in an environment that is conducive to high mic production with varieties that, as a whole, have a tendency toward high mic as well. The relationships associated with high mic and the third primary component (management) is not well understood in the context of desert cotton production.

Based on an analysis of data from several cotton growing areas in Arizona, it appears that there is indeed a relationship associated with location and variety and fiber mic. From this data there also appears to be a relationship between fiber mic and management, in that certain growers within given areas tend to have a very high percentage of their crop classed with high mic and another set of growers in the same area have a very low percentage of their crop with low mic using basically the same group of varieties.

There is evidence from earlier studies conducted in Arizona (Silvertooth et al., 1989; Silvertooth et al., 1990; Silvertooth et al., 1991; Silvertooth et al., 1992; and Silvertooth et al., 1993; Silvertooth et al., 1994; Unruh et al., 1995; Silvertooth and Norton, 1996; and Silvertooth and Norton, 1997) to study the effects of IT on yield and quality to suggest that IT and/or defoliation can have a significant impact on fiber mic. The initial efforts with this project revealed a significant reduction in fiber micronaire as a function of early IT management (Silvertooth et al., 2001).

It is the purpose of this research project to better delineate the contributions associated with genetics, environment, and management on fiber micronaire. The objective of this study was to further investigate the issue of IT management and the subsequent effects on the growth, development, yield, and micronaire of a group of common Upland varieties.

Materials and Methods

This study was conducted in 2000, 2001, and 2002 at the Maricopa Agricultural Center (MAC; 1,175 ft. elevation) on a Casa Grande sandy loam soil and at the Yuma Valley Agricultural Center (YVAC; 150 ft. elevation) on an Indio clay loam soil in 2001 and 2002. The experimental design was a split plot in a randomized complete block design with four replications. The main treatments consisted of three IT dates, designated as IT1, IT2, and IT3. Each main plot consisted of 12, 40-inch rows that extended the full length of the irrigation run (600 ft.). The subunits consisted of 13 Upland varieties at MAC and five varieties at YVAC. Subplots were 12, 40-inch rows wide, and 40 feet in length. The entire study areas were dry-planted and watered-up at both sites. All inputs such as fertilizer, water, and pest control were managed on an as-needed basis.

A complete set of plant measurements were collected inseason from all plots on 14-day intervals to monitor progress of growth and development of the crop. Measurements taken included: plant height, number of mainstem nodes, first fruiting branch, total number of aborted sites (positions 1 & 2), number of nodes above the top (1st position) fresh flower (NAWF), canopy closure, and number of blooms per unit area. Climatic conditions were also monitored using an Arizona Meteorological network (AZMET) stations located on both sites.

Irrigation termination treatments were imposed in relation to the crop fruiting cycle in a manner similar to that described in Figure 1. In tracking crop development, the crop was approaching cut-out, normally considered as having NAWF ≤ 5, as evidenced by an average NAWF ~ 6 among all varieties. The first IT treatment (IT1) was made with the intention of terminating irrigations somewhat pre-maturely. Based upon current UA
recommendations for IT to complete a single cycle fruit set, the more optimal date of IT would have included one additional irrigation (beyond IT1). In this experiment, IT2 was structured to provide an additional (one) irrigation beyond the more optimal date. For the IT3 plots the intention was to attempt a second cycle fruit set and irrigations were continued until approximately 15 September. The IT2 treatment consistently received two additional irrigations over IT1 and IT3 received four additional irrigations over IT1 (approximately two acre-feet of additional irrigation water).

Crop management and treatments are outlined in Tables 1-10. The planting, IT, defoliation, and harvest dates are outlined in Tables 1-5. Only the center four rows of each 12-row plot were harvested.

Approximately 20 lb. seed cotton subsamples were collected from each plot at harvest. These subsamples were ginned for turnout estimates and submitted to the USDA Cotton Classing office in Phoenix, AZ for HVI analysis. All mic and lint yield data were subjected to appropriate analysis of variance procedures (Steel and Torrie, 1980 and the SAS Institute, SAS, 1990).

**Results**


Summarizing the results for the 2000-2002 seasons, we found that fiber micronaire was significantly lower in the first IT treatment at both MAC and YVAC (less than 5.0). In 2001 at MAC, the third IT treatment (promoting a top crop development) did not produce a significant increase in yield as it did in 2000 and currently in 2002 (Figs. 5, 9, and 13). In addition, in 2001 at YVAC, the third IT treatment resulted in slightly higher but not significant increase (p>0.05) in lint yield with the top-crop. In 2002 the top crop did produce a significant yield increase (p <0.05) at both MAC and YVAC (Figs. 17 and 21).

These results clearly support the hypothesis concerning fiber development, micronaire, and late season irrigation management. Results have consistently shown for these three seasons that fiber micronaire can be significantly reduced and held below the discount range (5.0) for most varieties by IT management (Figs. 3, 7, 11, 15, and 19). In each case studied thus far, reasonable lint yields have still been realized with the earlier IT treatments. However, these studies have also demonstrated the potential of producing significantly higher lint yield with later IT, usually at the expense of higher fiber micronaire (≥5.0) values. A regression analysis of all data for the three years of this project at each location revealed a significant linear relationship for both micronaire and lint yield in relation to IT treatments (Figs. 22 and 23).

These results are consistent with earlier work on this topic (Silverttooth et al., 1989; Silverttooth et al., 1990; Silverttooth et al., 1991; Silverttooth et al., 1992; and Silverttooth et al., 1993; Silverttooth et al., 1994; Unruh et al., 1995).

**Acknowledgements**

The financial support provided by the Arizona Cotton Growers Association and Cotton Inc., the Arizona Cotton Research and Protection Council, Anderson Clayton Company, and Handwerker-Winburne is greatly appreciated. We gratefully acknowledge the excellent assistance from the personnel at the Maricopa and Yuma Valley Agricultural Centers. Also the hard work and technical assistance provided by the research assistants with the UA Cotton Agronomy program is greatly appreciated.
References


Figure 1. General irrigation termination points in relation to the fruiting cycle.

Table 1. Management summary for irrigation termination by variety experiment (all plots were watered up on 6 April), MAC, 2000.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Irrigation Termination Date</th>
<th>Defoliation Date</th>
<th>Harvest Date</th>
<th>Irrigation Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25 July</td>
<td>12 August</td>
<td>15 September</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>17 August</td>
<td>15 September</td>
<td>4 October</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>15 September</td>
<td>12 October</td>
<td>5 December</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2. Management summary for irrigation termination by variety experiment (all plots were watered up on 17 April), MAC, 2001.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Irrigation Termination Date</th>
<th>Defoliation Date</th>
<th>Harvest Date</th>
<th>Irrigation Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 August</td>
<td>24 August</td>
<td>12 September</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>24 August</td>
<td>14 September</td>
<td>3 October</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>20 September</td>
<td>26 October</td>
<td>21 November</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 3. Management summary for irrigation termination by variety experiment (all plots were watered up on 4 April), MAC, 2002.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Irrigation Termination Date</th>
<th>Defoliation Date</th>
<th>Harvest Date</th>
<th>Irrigation Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16 July</td>
<td>16 August</td>
<td>5 September</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>5 August</td>
<td>10 September</td>
<td>3 October</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>16 September</td>
<td>24 October</td>
<td>19 November</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 4. Management summary for irrigation termination by variety experiment (all plots were watered up on 21 March), YVAC, 2001.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Irrigation Termination Date</th>
<th>Defoliation Date</th>
<th>Harvest Date</th>
<th>Irrigation Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12 July</td>
<td>16 August</td>
<td>4 September</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>27 July</td>
<td>5 September</td>
<td>24 September</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>20 September</td>
<td>19 October</td>
<td>14 November</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 5. Management summary for irrigation termination by variety experiment (all plots were watered up on 10 April), YVAC, 2002.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Irrigation Termination Date</th>
<th>Defoliation Date</th>
<th>Harvest Date</th>
<th>Irrigation Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18 July</td>
<td>30 August</td>
<td>13 September</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>15 August</td>
<td>4 September</td>
<td>13 September</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>15 September</td>
<td>10 October</td>
<td>25 October</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6. Irrigation termination dates and varieties, irrigation termination dates by variety study, MAC, 2000 (6 April planting and water-up).

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Maturity Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BXN47</td>
<td>Medium</td>
</tr>
<tr>
<td>DP428B</td>
<td>Short-medium</td>
</tr>
<tr>
<td>DP422BR</td>
<td>Short</td>
</tr>
<tr>
<td>DP33B</td>
<td>Full</td>
</tr>
<tr>
<td>DP20B</td>
<td>Early</td>
</tr>
<tr>
<td>DP388</td>
<td>Medium</td>
</tr>
<tr>
<td>STV474</td>
<td>Medium</td>
</tr>
<tr>
<td>STV4691B</td>
<td>Medium</td>
</tr>
<tr>
<td>SG125BR</td>
<td>Short</td>
</tr>
<tr>
<td>SG747</td>
<td>medium</td>
</tr>
<tr>
<td>DP655BR</td>
<td>Full</td>
</tr>
<tr>
<td>DP451BR</td>
<td>medium</td>
</tr>
<tr>
<td>DP5415</td>
<td>Full</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date 1 (25 July)</td>
</tr>
<tr>
<td>Date 2 (17 August)</td>
</tr>
<tr>
<td>Date 3 (15 September)</td>
</tr>
</tbody>
</table>

Table 7. Irrigation termination dates and varieties, irrigation termination dates by variety study, MAC, 2001 (17 April planting and water-up).

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Maturity Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BXN47</td>
<td>Medium</td>
</tr>
<tr>
<td>DP428B</td>
<td>Short-medium</td>
</tr>
<tr>
<td>DP422BR</td>
<td>Short</td>
</tr>
<tr>
<td>DP33B</td>
<td>Full</td>
</tr>
<tr>
<td>DP458BR</td>
<td>Early</td>
</tr>
<tr>
<td>DP388</td>
<td>Medium</td>
</tr>
<tr>
<td>STV474</td>
<td>Medium</td>
</tr>
<tr>
<td>STV4691B</td>
<td>Medium</td>
</tr>
<tr>
<td>SG215BR</td>
<td>Short</td>
</tr>
<tr>
<td>SG747</td>
<td>medium</td>
</tr>
<tr>
<td>DP655BR</td>
<td>Full</td>
</tr>
<tr>
<td>DP451BR</td>
<td>medium</td>
</tr>
<tr>
<td>DP5415</td>
<td>Full</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date 1 (1 August)</td>
</tr>
<tr>
<td>Date 2 (24 August)</td>
</tr>
<tr>
<td>Date 3 (20 September)</td>
</tr>
</tbody>
</table>
Table 8. Irrigation termination dates and varieties, irrigation termination dates by variety study, MAC, 2002 (2 April planting and water-up).

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Maturity Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BXN47</td>
<td>Medium</td>
</tr>
<tr>
<td>DP428B</td>
<td>Short-medium</td>
</tr>
<tr>
<td>DP422BR</td>
<td>Short</td>
</tr>
<tr>
<td>DP33B</td>
<td>Full</td>
</tr>
<tr>
<td>DP458BR</td>
<td>Early</td>
</tr>
<tr>
<td>DP388</td>
<td>Medium</td>
</tr>
<tr>
<td>STV474</td>
<td>Medium</td>
</tr>
<tr>
<td>STV4691B</td>
<td>Medium</td>
</tr>
<tr>
<td>SG215BR</td>
<td>Short</td>
</tr>
<tr>
<td>SG747</td>
<td>medium</td>
</tr>
<tr>
<td>DP655BR</td>
<td>Full</td>
</tr>
<tr>
<td>DP451BR</td>
<td>medium</td>
</tr>
<tr>
<td>DP5415</td>
<td>Full</td>
</tr>
<tr>
<td>AG3601</td>
<td>Full</td>
</tr>
</tbody>
</table>

Irrigation Termination Dates

<table>
<thead>
<tr>
<th>Dates</th>
<th>(HU/Jan. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates 1 (16 July)</td>
<td>(2795)</td>
</tr>
<tr>
<td>Dates 2 (5 August)</td>
<td>(3367)</td>
</tr>
<tr>
<td>Dates 3 (16 September)</td>
<td>(4487)</td>
</tr>
</tbody>
</table>

Table 9. Irrigation termination dates and varieties, irrigation termination dates by variety study, YVAC, AZ, 2001 (21 March planting and water-up).

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Maturity Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG501BR</td>
<td>Short</td>
</tr>
<tr>
<td>SG747</td>
<td>medium</td>
</tr>
<tr>
<td>STV474</td>
<td>medium</td>
</tr>
<tr>
<td>DP22BR</td>
<td>short</td>
</tr>
<tr>
<td>DP451BR</td>
<td>medium</td>
</tr>
</tbody>
</table>

Irrigation Termination Dates

<table>
<thead>
<tr>
<th>Dates</th>
<th>(HU/Jan. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date 1 (12 July)</td>
<td>(2783)</td>
</tr>
<tr>
<td>Date 2 (27 July)</td>
<td>(3195)</td>
</tr>
<tr>
<td>Date 3 (20 September)</td>
<td>(4763)</td>
</tr>
</tbody>
</table>

Table 10. Irrigation termination dates and varieties, irrigation termination dates by variety study, YVAC, AZ, 2002 (9 April planting and water-up).

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Maturity Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG501BR</td>
<td>Short</td>
</tr>
<tr>
<td>SG747</td>
<td>medium</td>
</tr>
<tr>
<td>STV474</td>
<td>medium</td>
</tr>
<tr>
<td>DP22BR</td>
<td>short</td>
</tr>
<tr>
<td>DP451BR</td>
<td>medium</td>
</tr>
</tbody>
</table>

Irrigation Termination Dates

<table>
<thead>
<tr>
<th>Dates</th>
<th>(HU/Jan. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates 1 (18 July)</td>
<td>(2922)</td>
</tr>
<tr>
<td>Dates 2 (15 August)</td>
<td>(3722)</td>
</tr>
<tr>
<td>Dates 3 (15 September)</td>
<td>(4570)</td>
</tr>
</tbody>
</table>
Table 11. Experimental effects and statistical significance from the analysis of variance on micronaire, irrigation termination by variety study, MAC, 2000.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0032</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0012</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.5247</td>
</tr>
</tbody>
</table>

Table 12. Main effect results of micronaire for irrigation termination dates and varieties, MAC, 2000.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.58 b*</td>
</tr>
<tr>
<td>2</td>
<td>5.23 a</td>
</tr>
<tr>
<td>3</td>
<td>5.18 a</td>
</tr>
<tr>
<td>LSD</td>
<td>0.16</td>
</tr>
<tr>
<td>OSL**</td>
<td>0.0032</td>
</tr>
<tr>
<td>CV(%)§</td>
<td>6.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variety</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP655BR</td>
<td>5.32 a</td>
</tr>
<tr>
<td>DP5415</td>
<td>5.20 ab</td>
</tr>
<tr>
<td>DP422BR</td>
<td>5.17 ab</td>
</tr>
<tr>
<td>DP33B</td>
<td>5.17 ab</td>
</tr>
<tr>
<td>DP388</td>
<td>5.13 ab</td>
</tr>
<tr>
<td>BXLN47</td>
<td>5.12 abc</td>
</tr>
<tr>
<td>DP511BR</td>
<td>5.02 abc</td>
</tr>
<tr>
<td>STV474</td>
<td>4.97 abc</td>
</tr>
<tr>
<td>DP428B</td>
<td>4.93 abcd</td>
</tr>
<tr>
<td>STV4691B</td>
<td>4.82 bcd</td>
</tr>
<tr>
<td>SG747</td>
<td>4.81 bcd</td>
</tr>
<tr>
<td>DP20B</td>
<td>4.73 cd</td>
</tr>
<tr>
<td>SG125BR</td>
<td>4.54 d</td>
</tr>
<tr>
<td>LSD</td>
<td>0.40</td>
</tr>
<tr>
<td>OSL</td>
<td>0.0012</td>
</tr>
<tr>
<td>CV(%)</td>
<td>8.6</td>
</tr>
</tbody>
</table>

*Least Significant Difference – means followed by the same letter are not significantly different according to a Fishers mean separation test at 0.05 level.

**Observed Significance Level.

§Coefficient of Variation
Table 13. Micronaire results for all varieties by irrigation termination dates, MAC, 2000.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (24 July)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP 655BR</td>
<td>5.07</td>
</tr>
<tr>
<td>DP 5415</td>
<td>4.97</td>
</tr>
<tr>
<td>DP 388</td>
<td>4.87</td>
</tr>
<tr>
<td>DP 33B</td>
<td>4.80</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>4.77</td>
</tr>
<tr>
<td>BXN 47</td>
<td>4.70</td>
</tr>
<tr>
<td>DP 428B</td>
<td>4.53</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.53</td>
</tr>
<tr>
<td>STV 4691B</td>
<td>4.47</td>
</tr>
<tr>
<td>STV 474</td>
<td>4.43</td>
</tr>
<tr>
<td>SG 125BR</td>
<td>4.17</td>
</tr>
<tr>
<td>SG 747</td>
<td>4.13</td>
</tr>
<tr>
<td>DP 20B</td>
<td>4.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (15 August)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP 422BR</td>
</tr>
<tr>
<td>DP 655BR</td>
</tr>
<tr>
<td>DP 5415</td>
</tr>
<tr>
<td>BXN 47</td>
</tr>
<tr>
<td>DP 33B</td>
</tr>
<tr>
<td>SG 747</td>
</tr>
<tr>
<td>DP 451BR</td>
</tr>
<tr>
<td>STV 474</td>
</tr>
<tr>
<td>DP 428B</td>
</tr>
<tr>
<td>DP 388</td>
</tr>
<tr>
<td>STV 4691B</td>
</tr>
<tr>
<td>DP 20B</td>
</tr>
<tr>
<td>SG 125BR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (15 September)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP 422BR</td>
</tr>
<tr>
<td>DP 388</td>
</tr>
<tr>
<td>DP 655BR</td>
</tr>
<tr>
<td>DP 33B</td>
</tr>
<tr>
<td>STV 474</td>
</tr>
<tr>
<td>BXN 47</td>
</tr>
<tr>
<td>DP 5415</td>
</tr>
<tr>
<td>DP 428B</td>
</tr>
<tr>
<td>DP 451BR</td>
</tr>
<tr>
<td>DP 20B</td>
</tr>
<tr>
<td>SG 747</td>
</tr>
<tr>
<td>STV 4691B</td>
</tr>
<tr>
<td>SG 125BR</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.5247)
Figure 2. Micronaire values as affected by irrigation termination date for each variety, MAC, 2000.

Figure 3. Mean micronaire values as affected by irrigation termination dates for all varieties, MAC, 2000.
Table 14. Micronaire results by variety for each irrigation termination date, MAC, AZ, 2000.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>BXN</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>SG</th>
<th>SG</th>
<th>STV</th>
<th>STV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.70</td>
<td>4.10</td>
<td>4.80</td>
<td>4.87</td>
<td>4.53</td>
<td>4.77</td>
<td>4.97</td>
<td>5.07</td>
<td>4.17</td>
<td>4.13</td>
<td>4.47</td>
<td>4.43</td>
</tr>
<tr>
<td>2</td>
<td>5.27</td>
<td>5.00</td>
<td>5.33</td>
<td>5.13</td>
<td>5.53</td>
<td>5.17</td>
<td>5.43</td>
<td>5.50</td>
<td>4.83</td>
<td>5.20</td>
<td>5.13</td>
<td>5.17</td>
</tr>
<tr>
<td>3</td>
<td>5.40</td>
<td>5.10</td>
<td>5.37</td>
<td>5.40</td>
<td>5.43</td>
<td>5.13</td>
<td>5.13</td>
<td>5.20</td>
<td>4.63</td>
<td>5.10</td>
<td>4.87</td>
<td>5.30</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.5247)

Table 15. Experimental effects and statistical significance from the analysis of variance on lint yield, irrigation termination by variety, MAC, 2000.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt; F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0272</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0529</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.0452</td>
</tr>
</tbody>
</table>

Table 16. Yield results (lbs. lint/acre) by variety for each irrigation termination date for cotton planted on 6 April, MAC, AZ, 2000.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>BXN</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>DP</th>
<th>SG</th>
<th>SG</th>
<th>STV</th>
<th>STV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1245</td>
<td>1271</td>
<td>1131 b</td>
<td>1233</td>
<td>1283</td>
<td>1194 b</td>
<td>1359</td>
<td>1131</td>
<td>1042 b</td>
<td>1093 b</td>
<td>1385 b</td>
<td>1448</td>
</tr>
<tr>
<td>2</td>
<td>1441</td>
<td>1614</td>
<td>1614 a</td>
<td>1525</td>
<td>1550</td>
<td>1617 a</td>
<td>1534</td>
<td>1527</td>
<td>1385 ab</td>
<td>1578 a</td>
<td>1225 b</td>
<td>1708</td>
</tr>
<tr>
<td>3</td>
<td>1626</td>
<td>1741</td>
<td>1855 a</td>
<td>1531</td>
<td>1677</td>
<td>1829 a</td>
<td>1842</td>
<td>1601</td>
<td>1690 a</td>
<td>1728 a</td>
<td>1829 a</td>
<td>1855</td>
</tr>
<tr>
<td>LSD*</td>
<td>NS</td>
<td>NS</td>
<td>449 NS</td>
<td>NS</td>
<td>370 NS</td>
<td>NS</td>
<td>NS</td>
<td>450 NS</td>
<td>423 NS</td>
<td>413 NS</td>
<td>274</td>
<td></td>
</tr>
<tr>
<td>OSL**</td>
<td>0.2212</td>
<td>0.0664</td>
<td>0.0260</td>
<td>0.115</td>
<td>0.1466</td>
<td>0.0211</td>
<td>0.1149</td>
<td>0.1904</td>
<td>0.0402</td>
<td>0.0302</td>
<td>0.338</td>
<td>0.1243</td>
</tr>
<tr>
<td>CV (%)§</td>
<td>15.3</td>
<td>11.4</td>
<td>12.9</td>
<td>4.3</td>
<td>12.9</td>
<td>10.6</td>
<td>13.6</td>
<td>19.2</td>
<td>14.5</td>
<td>127</td>
<td>12.3</td>
<td>11.1</td>
</tr>
</tbody>
</table>

*Least Significant Difference – means followed by the same letter within a column are not significantly different according to a Fishers mean separation test at the 0.05 level.
**Observed Significance Level.
§Coefficient of Variation.
<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (24 July)</th>
<th>Lint Yield (lbs. lint/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV4691B</td>
<td>1448 a</td>
</tr>
<tr>
<td>SG747</td>
<td>1385 ab</td>
</tr>
<tr>
<td>DP451BR</td>
<td>1359 ab</td>
</tr>
<tr>
<td>STV474</td>
<td>1334 abc</td>
</tr>
<tr>
<td>DP422BR</td>
<td>1283 abcd</td>
</tr>
<tr>
<td>DP20B</td>
<td>1270 abcd</td>
</tr>
<tr>
<td>DP388</td>
<td>1245 abcde</td>
</tr>
<tr>
<td>BXN47</td>
<td>1245 abcde</td>
</tr>
<tr>
<td>DP428B</td>
<td>1194 bcde</td>
</tr>
<tr>
<td>DP5415</td>
<td>1131 cde</td>
</tr>
<tr>
<td>DP33B</td>
<td>1131 cde</td>
</tr>
<tr>
<td>SG125BR</td>
<td>1093 de</td>
</tr>
<tr>
<td>DP655BR</td>
<td>1042 e</td>
</tr>
</tbody>
</table>

| LSD*                                   | 204                         |
| OSL**                                  | 0.0099                      |
| CV (%)                                 | 9.7                         |

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (15 August)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV4691B</td>
</tr>
<tr>
<td>DP428B</td>
</tr>
<tr>
<td>DP33B</td>
</tr>
<tr>
<td>DP20B</td>
</tr>
<tr>
<td>SG125BR</td>
</tr>
<tr>
<td>DP422BR</td>
</tr>
<tr>
<td>DP388</td>
</tr>
<tr>
<td>DP451BR</td>
</tr>
<tr>
<td>DP5415</td>
</tr>
<tr>
<td>BXN47</td>
</tr>
<tr>
<td>DP655BR</td>
</tr>
<tr>
<td>STV474</td>
</tr>
<tr>
<td>SG747</td>
</tr>
</tbody>
</table>

| LSD*                                   | NS                          |
| OSL**                                  | 0.0991                      |
| CV (%)                                 | 11.1                        |

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (15 September)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP33B</td>
</tr>
<tr>
<td>ST4691B</td>
</tr>
<tr>
<td>DP451BR</td>
</tr>
<tr>
<td>DP428B</td>
</tr>
<tr>
<td>SG747</td>
</tr>
<tr>
<td>DP20B</td>
</tr>
<tr>
<td>SG125BR</td>
</tr>
<tr>
<td>ST474</td>
</tr>
<tr>
<td>DP655BR</td>
</tr>
<tr>
<td>DP422BR</td>
</tr>
<tr>
<td>BXN47</td>
</tr>
<tr>
<td>DP5415</td>
</tr>
<tr>
<td>DP388</td>
</tr>
</tbody>
</table>

| LSD*                                   | NS                          |
| OSL**                                  | 0.2218                      |
| CV (%)§                                | 8.5                         |

*Least Significant Difference (LSD)

**Observed Significance Level at the 0.05 level.

§Coefficient of Variation
Figure 4. Lint yield as affected by irrigation Termination Dates for each variety, MAC, 2000.

Figure 5. Mean lint yield as affected by irrigation termination dates for all varieties, MAC, 2000.
Table 18. Experimental effects and statistical significance from the analysis of variance on micronaire, irrigation termination by variety, MAC, 2001.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0010</td>
</tr>
<tr>
<td>Variety</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.0160</td>
</tr>
</tbody>
</table>

Table 19. Main effect results of micronaire for irrigation termination dates and varieties for cotton planted on 17 April (water-up) MAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.74 b*</td>
</tr>
<tr>
<td>2</td>
<td>5.07 a</td>
</tr>
<tr>
<td>3</td>
<td>5.19 a</td>
</tr>
<tr>
<td>LSD</td>
<td>0.14</td>
</tr>
<tr>
<td>OSL**</td>
<td>0.0160</td>
</tr>
<tr>
<td>CV(%)§</td>
<td>6.28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variety</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV474</td>
<td>5.33 a</td>
</tr>
<tr>
<td>SG747</td>
<td>5.33 a</td>
</tr>
<tr>
<td>BXXN47</td>
<td>5.11 ab</td>
</tr>
<tr>
<td>SG215BR</td>
<td>5.08 ab</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.08 ab</td>
</tr>
<tr>
<td>DP428B</td>
<td>5.07 ab</td>
</tr>
<tr>
<td>STV4691B</td>
<td>5.00 b</td>
</tr>
<tr>
<td>DP388</td>
<td>5.00 b</td>
</tr>
<tr>
<td>DP33B</td>
<td>4.97 bc</td>
</tr>
<tr>
<td>DP458BR</td>
<td>4.88 bcd</td>
</tr>
<tr>
<td>DP422BR</td>
<td>4.84 bcd</td>
</tr>
<tr>
<td>DP5415</td>
<td>4.70 cd</td>
</tr>
<tr>
<td>DP655BR</td>
<td>4.61 d</td>
</tr>
<tr>
<td>LSD</td>
<td>0.40</td>
</tr>
<tr>
<td>OSL</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>CV(%)§</td>
<td>8.6</td>
</tr>
</tbody>
</table>

*Least Significant Difference – means followed by the same letter are not significantly different according to a Fishers mean separation test at 0.05 level.

**Observed Significance Level.

§Coefficient of Variation
Table 20. Micronaire results for all varieties by irrigation termination dates, MAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (1 August)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 747</td>
<td>5.13 a*</td>
</tr>
<tr>
<td>STV 474</td>
<td>5.07 a</td>
</tr>
<tr>
<td>SG 215BR</td>
<td>4.97 ab</td>
</tr>
<tr>
<td>DP 388</td>
<td>4.97 ab</td>
</tr>
<tr>
<td>DP 428B</td>
<td>4.93 ab</td>
</tr>
<tr>
<td>BXN 47</td>
<td>4.90 abc</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>4.86 abc</td>
</tr>
<tr>
<td>STV 4691B</td>
<td>4.73 abcd</td>
</tr>
<tr>
<td>DP 33B</td>
<td>4.60 bcde</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.67 cde</td>
</tr>
<tr>
<td>DP 458BR</td>
<td>4.37 de</td>
</tr>
<tr>
<td>DP 655BR</td>
<td>4.37 de</td>
</tr>
<tr>
<td>DP 5415</td>
<td>4.23 e</td>
</tr>
</tbody>
</table>

LSD* 0.4567  
OSL** 0.0033  
CV (%) 5.72

Irrigation Termination Date 2 (24 August)

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (24 August)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 747</td>
<td>5.57 a</td>
</tr>
<tr>
<td>STV 474</td>
<td>5.47 ab</td>
</tr>
<tr>
<td>BXN 47</td>
<td>5.30 abc</td>
</tr>
<tr>
<td>SG 215BR</td>
<td>5.27 abc</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>5.17 abcd</td>
</tr>
<tr>
<td>DP 33B</td>
<td>5.07 bcde</td>
</tr>
<tr>
<td>STV 4691</td>
<td>5.03 cd</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>5.00 cd</td>
</tr>
<tr>
<td>DP 428B</td>
<td>5.00 cd</td>
</tr>
<tr>
<td>DP 458BR</td>
<td>4.93 cd</td>
</tr>
<tr>
<td>DP 5415</td>
<td>4.93 cd</td>
</tr>
<tr>
<td>DP 388</td>
<td>4.80 de</td>
</tr>
<tr>
<td>DP 655BR</td>
<td>4.43 e</td>
</tr>
</tbody>
</table>

LSD* 0.4047  
OSL** 0.0009  
CV (%) 4.73

Irrigation Termination Date 3 (20 September)

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (20 September)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV 474</td>
<td>5.47 a</td>
</tr>
<tr>
<td>DP 458BR</td>
<td>5.33 ab</td>
</tr>
<tr>
<td>SG 747</td>
<td>5.30 abc</td>
</tr>
<tr>
<td>DP 428B</td>
<td>5.27 abc</td>
</tr>
<tr>
<td>DP 33B</td>
<td>5.23 abc</td>
</tr>
<tr>
<td>STV 4691</td>
<td>5.23 abc</td>
</tr>
<tr>
<td>DP 388</td>
<td>5.23 abc</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>5.20 abcd</td>
</tr>
<tr>
<td>BXN 47</td>
<td>5.13 abcde</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>5.07 bcde</td>
</tr>
<tr>
<td>DP 655BR</td>
<td>5.03 cde</td>
</tr>
<tr>
<td>SG 215BR</td>
<td>5.00 de</td>
</tr>
<tr>
<td>DP 5415</td>
<td>4.93 e</td>
</tr>
</tbody>
</table>

LSD* 0.2759  
OSL** 0.0254  
CV (%) 3.12

*Least Significant Difference (LSD)  
**Observed Significance Level at the 0.05 level.  
§Coefficient of Variation
Figure 6. Micronaire values as affected by irrigation termination date for each variety, MAC, 2001.

Figure 7. Mean micronaire values as affected by irrigation termination dates for all varieties, MAC, 2001.
Table 21. Micronaire results by variety for each irrigation termination date for cotton planted on 17 April (water-up), MAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>BXN</th>
<th>DP 33B</th>
<th>DP 388</th>
<th>DP 422BR</th>
<th>DP 428B</th>
<th>DP 451BR</th>
<th>DP 458BR</th>
<th>DP 5415</th>
<th>DP 655BR</th>
<th>SG 215BR</th>
<th>SG 747</th>
<th>STV 4691B</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.90 b</td>
<td>4.60 b</td>
<td>4.97</td>
<td>4.47 b</td>
<td>4.93</td>
<td>4.87</td>
<td>4.37 c</td>
<td>4.23 b</td>
<td>4.37</td>
<td>4.97</td>
<td>5.13</td>
<td>4.73</td>
<td>5.07</td>
</tr>
<tr>
<td>2</td>
<td>5.30 a</td>
<td>5.07 a</td>
<td>4.80</td>
<td>5.00 a</td>
<td>5.00</td>
<td>5.17</td>
<td>4.93 b</td>
<td>4.93 a</td>
<td>4.43</td>
<td>5.27</td>
<td>5.57</td>
<td>5.03</td>
<td>5.47</td>
</tr>
<tr>
<td>3</td>
<td>5.13 a</td>
<td>5.23 a</td>
<td>5.23</td>
<td>5.07 a</td>
<td>5.27</td>
<td>5.20</td>
<td>5.33 a</td>
<td>4.93 a</td>
<td>5.03</td>
<td>5.00</td>
<td>5.32</td>
<td>5.23</td>
<td>5.47</td>
</tr>
<tr>
<td>LSD*</td>
<td>0.1999</td>
<td>0.4627</td>
<td>NS</td>
<td>0.1511 NS</td>
<td>NS</td>
<td>0.3294</td>
<td>0.5926 NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>OSL**</td>
<td>0.0130</td>
<td>0.0420</td>
<td>0.1008</td>
<td>0.0007</td>
<td>0.2034</td>
<td>0.4937</td>
<td>0.0032</td>
<td>0.0476</td>
<td>0.1013</td>
<td>0.1172</td>
<td>0.2139</td>
<td>0.878</td>
<td>0.1234</td>
</tr>
<tr>
<td>CV (%)§</td>
<td>1.73</td>
<td>4.11</td>
<td>3.65</td>
<td>1.38</td>
<td>3.86</td>
<td>6.81</td>
<td>2.98</td>
<td>5.56</td>
<td>6.66</td>
<td>2.86</td>
<td>4.66</td>
<td>4.00</td>
<td>3.90</td>
</tr>
</tbody>
</table>

*Least Significant Difference – means followed by the same letter within a column are not significantly different according to a Fishers mean separation test at the 0.05 level.
**Observed Significance Level.
§Coefficient of Variation.

Table 22. Experimental effects and statistical significance from the analysis of variance on lint yield, irrigation termination by variety, MAC, 2001.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0126</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0006</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.0011</td>
</tr>
</tbody>
</table>

Table 23. Yield results (lbs. lint/acre) by variety for each irrigation termination date for cotton planted on 17 April (water-up), MAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>BXN</th>
<th>DP 33B</th>
<th>DP 388</th>
<th>DP 422BR</th>
<th>DP 428B</th>
<th>DP 451BR</th>
<th>DP 458BR</th>
<th>DP 5415</th>
<th>DP 655BR</th>
<th>SG 215BR</th>
<th>SG 747</th>
<th>STV 4691B</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1302</td>
<td>1215 b</td>
<td>1258</td>
<td>1320</td>
<td>1306</td>
<td>1421</td>
<td>1156 b</td>
<td>953</td>
<td>955 b</td>
<td>1414</td>
<td>1474</td>
<td>1306</td>
<td>1271</td>
</tr>
<tr>
<td>2</td>
<td>1416</td>
<td>1625 a</td>
<td>1506</td>
<td>1581</td>
<td>1256</td>
<td>1419</td>
<td>1671 a</td>
<td>1295</td>
<td>1397 a</td>
<td>1493</td>
<td>1399</td>
<td>1467</td>
<td>1232</td>
</tr>
<tr>
<td>3</td>
<td>1211</td>
<td>1380 ab</td>
<td>1301</td>
<td>1385</td>
<td>1409</td>
<td>1540</td>
<td>1647 a</td>
<td>1508</td>
<td>1420 a</td>
<td>1643</td>
<td>1476</td>
<td>1503</td>
<td>1330</td>
</tr>
<tr>
<td>LSD*</td>
<td>NS</td>
<td>449</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>154</td>
<td>NS</td>
<td>389</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>OSL**</td>
<td>0.2116</td>
<td>0.0297</td>
<td>0.1012</td>
<td>0.1403</td>
<td>0.5668</td>
<td>0.2563</td>
<td>0.0012</td>
<td>0.0760</td>
<td>0.0493</td>
<td>0.1392</td>
<td>0.8697</td>
<td>0.3551</td>
<td>0.4790</td>
</tr>
<tr>
<td>CV (%)§</td>
<td>8.8</td>
<td>8.2</td>
<td>8.2</td>
<td>9.01</td>
<td>12.6</td>
<td>5.9</td>
<td>4.6</td>
<td>16.9</td>
<td>13.6</td>
<td>7.3</td>
<td>13.8</td>
<td>10.9</td>
<td>7.1</td>
</tr>
</tbody>
</table>

*Least Significant Difference – means followed by the same letter within a column are not significantly different according to a Fishers mean separation test at 0.05 level.
**Observed Significance Level.
§Coefficient of Variation.
Table 24. Yield results for all varieties by irrigation termination dates, MAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (1 August)</th>
<th>Lint Yield (lbs. lint/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG747</td>
<td>1474 a*</td>
</tr>
<tr>
<td>DP451BR</td>
<td>1421 ab</td>
</tr>
<tr>
<td>SG215BR</td>
<td>1414 ab</td>
</tr>
<tr>
<td>DP422BR</td>
<td>1320 bc</td>
</tr>
<tr>
<td>DP428B</td>
<td>1306 bc</td>
</tr>
<tr>
<td>STV4691B</td>
<td>1306 bc</td>
</tr>
<tr>
<td>BXN47</td>
<td>1302 bc</td>
</tr>
<tr>
<td>STV474</td>
<td>1271 bcd</td>
</tr>
<tr>
<td>DP388</td>
<td>1258 bcd</td>
</tr>
<tr>
<td>DP458BR</td>
<td>1214 cd</td>
</tr>
<tr>
<td>DP33B</td>
<td>1156 d</td>
</tr>
<tr>
<td>DP655BR</td>
<td>955 e</td>
</tr>
<tr>
<td>DP5415</td>
<td>953 e</td>
</tr>
<tr>
<td>LSD*</td>
<td>150</td>
</tr>
<tr>
<td>OSL**</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>CV (%)</td>
<td>7.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (24 August)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP458BR</td>
</tr>
<tr>
<td>DP33B</td>
</tr>
<tr>
<td>DP422BR</td>
</tr>
<tr>
<td>DP388</td>
</tr>
<tr>
<td>SG215BR</td>
</tr>
<tr>
<td>STV4691B</td>
</tr>
<tr>
<td>DP451BR</td>
</tr>
<tr>
<td>BXN47</td>
</tr>
<tr>
<td>SG747</td>
</tr>
<tr>
<td>DP655BR</td>
</tr>
<tr>
<td>DP5415</td>
</tr>
<tr>
<td>DP428B</td>
</tr>
<tr>
<td>STV474</td>
</tr>
<tr>
<td>LSD*</td>
</tr>
<tr>
<td>OSL**</td>
</tr>
<tr>
<td>CV (%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (20 September)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP458BR</td>
</tr>
<tr>
<td>SG215BR</td>
</tr>
<tr>
<td>DP451BR</td>
</tr>
<tr>
<td>DP5415</td>
</tr>
<tr>
<td>STV4691B</td>
</tr>
<tr>
<td>SG747</td>
</tr>
<tr>
<td>DP655BR</td>
</tr>
<tr>
<td>DP428B</td>
</tr>
<tr>
<td>DP422BR</td>
</tr>
<tr>
<td>DP33B</td>
</tr>
<tr>
<td>STV474</td>
</tr>
<tr>
<td>DP388</td>
</tr>
<tr>
<td>BXN47</td>
</tr>
<tr>
<td>LSD*</td>
</tr>
<tr>
<td>OSL**</td>
</tr>
<tr>
<td>CV (%)§</td>
</tr>
</tbody>
</table>

*Least Significant Difference (LSD)
**Observed Significance Level at the 0.05 level.
§Coefficient of Variation
Figure 8. Lint yield as affected by irrigation termination dates for each variety, MAC, 2001.

Figure 9. Mean lint yield as affected by irrigation termination dates for all varieties, MAC, 2001.
Table 25. Experimental effects and statistical significance from the analysis of variance on micronaire, irrigation termination by variety, MAC, 2002.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0071</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0014</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.5648</td>
</tr>
</tbody>
</table>

Table 26. Main effect results of micronaire for irrigation termination dates and varieties for cotton planted on 17 April (water-up) MAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.14 c</td>
</tr>
<tr>
<td>2</td>
<td>5.36 a</td>
</tr>
<tr>
<td>3</td>
<td>5.26 b</td>
</tr>
</tbody>
</table>

LSD 0.96
OSL** 0.0071
CV(%)§ 4.2

<table>
<thead>
<tr>
<th>Variety</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG3601</td>
<td>5.55 a</td>
</tr>
<tr>
<td>STV474</td>
<td>5.48 a</td>
</tr>
<tr>
<td>DP458BR</td>
<td>5.37 ab</td>
</tr>
<tr>
<td>DP428B</td>
<td>5.32 abc</td>
</tr>
<tr>
<td>SG215BR</td>
<td>5.31 abc</td>
</tr>
<tr>
<td>DP33B</td>
<td>5.29 bcd</td>
</tr>
<tr>
<td>SG747</td>
<td>5.24 bcde</td>
</tr>
<tr>
<td>DP5415</td>
<td>5.21 cde</td>
</tr>
<tr>
<td>BXXN47</td>
<td>5.21 cde</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.20 cde</td>
</tr>
<tr>
<td>DP388</td>
<td>5.14 de</td>
</tr>
<tr>
<td>STV4691B</td>
<td>5.13 de</td>
</tr>
<tr>
<td>DP422BR</td>
<td>5.12 de</td>
</tr>
<tr>
<td>DP655BR</td>
<td>5.08 e</td>
</tr>
</tbody>
</table>

LSD 0.34
OSL 0.0014
CV(%) 4.0

*Least Significant Difference – means followed by the same letter are not significantly different according to a Fishers mean separation test at 0.05 level.

**Observed Significance Level.

§Coefficient of Variation
Table 27. Micronaire results for all varieties by irrigation termination dates, MAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (16 July)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG3601</td>
<td>5.40</td>
</tr>
<tr>
<td>STV474</td>
<td>5.37</td>
</tr>
<tr>
<td>DP428B</td>
<td>5.33</td>
</tr>
<tr>
<td>SG215BR</td>
<td>5.23</td>
</tr>
<tr>
<td>SG747</td>
<td>5.23</td>
</tr>
<tr>
<td>DP458BR</td>
<td>5.23</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.20</td>
</tr>
<tr>
<td>BXN47</td>
<td>5.17</td>
</tr>
<tr>
<td>DP5415</td>
<td>5.10</td>
</tr>
<tr>
<td>DP388</td>
<td>5.10</td>
</tr>
<tr>
<td>STN4691B</td>
<td>4.97</td>
</tr>
<tr>
<td>DP33B</td>
<td>4.97</td>
</tr>
<tr>
<td>DP422BR</td>
<td>4.90</td>
</tr>
<tr>
<td>DP655BR</td>
<td>4.90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (5 August)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG3601</td>
<td>5.80</td>
</tr>
<tr>
<td>STV474</td>
<td>5.63</td>
</tr>
<tr>
<td>DP33B</td>
<td>5.57</td>
</tr>
<tr>
<td>DP458BR</td>
<td>5.50</td>
</tr>
<tr>
<td>DP655BR</td>
<td>5.37</td>
</tr>
<tr>
<td>DP428B</td>
<td>5.37</td>
</tr>
<tr>
<td>SG215BR</td>
<td>5.30</td>
</tr>
<tr>
<td>STV4691B</td>
<td>5.27</td>
</tr>
<tr>
<td>DP5415</td>
<td>5.27</td>
</tr>
<tr>
<td>DP388</td>
<td>5.23</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.23</td>
</tr>
<tr>
<td>BXN47</td>
<td>5.23</td>
</tr>
<tr>
<td>DP422BR</td>
<td>5.23</td>
</tr>
<tr>
<td>SG747</td>
<td>5.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (16 September)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG3601</td>
<td>5.45</td>
</tr>
<tr>
<td>STV474</td>
<td>5.43</td>
</tr>
<tr>
<td>SG215BR</td>
<td>5.40</td>
</tr>
<tr>
<td>DP458BR</td>
<td>5.37</td>
</tr>
<tr>
<td>DP33B</td>
<td>5.33</td>
</tr>
<tr>
<td>SG747</td>
<td>5.30</td>
</tr>
<tr>
<td>DP5415</td>
<td>5.27</td>
</tr>
<tr>
<td>DP428B</td>
<td>5.27</td>
</tr>
<tr>
<td>DP422BR</td>
<td>5.23</td>
</tr>
<tr>
<td>BXN47</td>
<td>5.23</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.17</td>
</tr>
<tr>
<td>STV4691B</td>
<td>5.17</td>
</tr>
<tr>
<td>DP388</td>
<td>5.10</td>
</tr>
<tr>
<td>DP655BR</td>
<td>4.97</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.5648)
Figure 10. Micronaire values as affected by irrigation termination date for each variety, MAC, 2002.

Figure 11. Mean micronaire values as affected by irrigation termination dates for all varieties, MAC, 2002.
Table 28. Micronaire results by variety for each irrigation termination date, MAC, AZ, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>AG 3601</th>
<th>BXN 47</th>
<th>DP 33B</th>
<th>DP 388</th>
<th>DP 422BR</th>
<th>DP 428B</th>
<th>DP 451BR</th>
<th>DP 458BR</th>
<th>DP 5415</th>
<th>DP 655BR</th>
<th>DP 125BR</th>
<th>SG 747</th>
<th>STV 4691B</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.40</td>
<td>5.17</td>
<td>4.97</td>
<td>5.10</td>
<td>4.90</td>
<td>5.33</td>
<td>5.20</td>
<td>5.23</td>
<td>5.10</td>
<td>4.90</td>
<td>5.23</td>
<td>5.23</td>
<td>4.97</td>
<td>5.37</td>
</tr>
<tr>
<td>2</td>
<td>5.80</td>
<td>5.23</td>
<td>5.57</td>
<td>5.23</td>
<td>5.23</td>
<td>5.37</td>
<td>5.23</td>
<td>5.50</td>
<td>5.27</td>
<td>5.37</td>
<td>5.30</td>
<td>5.20</td>
<td>5.27</td>
<td>5.63</td>
</tr>
<tr>
<td>3</td>
<td>5.45</td>
<td>5.23</td>
<td>5.33</td>
<td>5.10</td>
<td>5.23</td>
<td>5.27</td>
<td>5.17</td>
<td>5.37</td>
<td>5.27</td>
<td>4.97</td>
<td>5.40</td>
<td>5.30</td>
<td>5.17</td>
<td>5.43</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.5648)

Table 29. Experimental effects and statistical significance from the analysis of variance on lint yield, irrigation termination by variety, MAC, 2002.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0006</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.0354</td>
</tr>
</tbody>
</table>

Table 30. Yield results (lbs. lint/acre) by variety for each irrigation termination date for cotton planted on 2 April, MAC, AZ, 2002.

<table>
<thead>
<tr>
<th>TT Date</th>
<th>AG 3601</th>
<th>BXN 47</th>
<th>DP 33B</th>
<th>DP 388</th>
<th>DP 422BR</th>
<th>DP 428B</th>
<th>DP 451BR</th>
<th>DP 458BR</th>
<th>DP 5415</th>
<th>DP 655BR</th>
<th>DP 125BR</th>
<th>SG 747</th>
<th>STV 4691B</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>873 b</td>
<td>1015</td>
<td>1020</td>
<td>1038</td>
<td>867 b</td>
<td>970</td>
<td>1018</td>
<td>1177</td>
<td>1087 b</td>
<td>1130 b</td>
<td>1071</td>
<td>990</td>
<td>1143</td>
<td>1031</td>
</tr>
<tr>
<td>2</td>
<td>1157 b</td>
<td>1044</td>
<td>1486</td>
<td>1160</td>
<td>1106 a</td>
<td>1003</td>
<td>1087</td>
<td>1578</td>
<td>1402 a</td>
<td>1466 a</td>
<td>1164</td>
<td>1332</td>
<td>1171</td>
<td>1040</td>
</tr>
<tr>
<td>3</td>
<td>1586 a</td>
<td>1281</td>
<td>1362</td>
<td>1238</td>
<td>1186 a</td>
<td>1230</td>
<td>1353</td>
<td>1884</td>
<td>1677 a</td>
<td>1735 a</td>
<td>1230</td>
<td>1368</td>
<td>1260</td>
<td>1209</td>
</tr>
</tbody>
</table>

LSD* 315 NS NS NS 128 NS NS 453 310 309 NS NS NS NS

OSL** 0.0204 0.1005 0.1050 0.04090 0.0051 0.1141 0.0532 0.0306 0.0157 0.0140 0.2269 0.1782 0.5895 0.1451

CV (%)§ 6.1 10.9 15.8 14.4 5.37 11.6 10.29 12.9 9.8 9.4 8.0 17.7 11.4 8.8

*Least Significant Difference – means followed by the same letter within a column are not significantly different according to a Fishers mean separation test at the 0.05 level.

**Observed Significance Level.

§Coefficient of Variation.
Table 31. Yield results for all varieties by irrigation termination dates, MAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (16 July)</th>
<th>Lint Yield (lbs. lint/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP458BR</td>
<td>1177</td>
</tr>
<tr>
<td>STV4691B</td>
<td>1143</td>
</tr>
<tr>
<td>DP655BR</td>
<td>1130</td>
</tr>
<tr>
<td>DP5415</td>
<td>1087</td>
</tr>
<tr>
<td>SG215BR</td>
<td>1072</td>
</tr>
<tr>
<td>DP388</td>
<td>1038</td>
</tr>
<tr>
<td>STV474</td>
<td>1031</td>
</tr>
<tr>
<td>DP33B</td>
<td>1020</td>
</tr>
<tr>
<td>DP451BR</td>
<td>1018</td>
</tr>
<tr>
<td>BNXN47</td>
<td>1015</td>
</tr>
<tr>
<td>SG747</td>
<td>990</td>
</tr>
<tr>
<td>DP428B</td>
<td>970</td>
</tr>
<tr>
<td>AG3601</td>
<td>873</td>
</tr>
<tr>
<td>DP422BR</td>
<td>867</td>
</tr>
<tr>
<td>LSD*</td>
<td>NS</td>
</tr>
<tr>
<td>OSL**</td>
<td>0.5587</td>
</tr>
<tr>
<td>CV (%)</td>
<td>15.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (5 August)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP458BR</td>
</tr>
<tr>
<td>DP33B</td>
</tr>
<tr>
<td>DP655BR</td>
</tr>
<tr>
<td>DP5415</td>
</tr>
<tr>
<td>SG747</td>
</tr>
<tr>
<td>STV4691B</td>
</tr>
<tr>
<td>SG215BR</td>
</tr>
<tr>
<td>DP388</td>
</tr>
<tr>
<td>AG3601</td>
</tr>
<tr>
<td>DP422BR</td>
</tr>
<tr>
<td>DP451BR</td>
</tr>
<tr>
<td>BNXN47</td>
</tr>
<tr>
<td>STV474</td>
</tr>
<tr>
<td>DP428B</td>
</tr>
<tr>
<td>LSD*</td>
</tr>
<tr>
<td>OSL**</td>
</tr>
<tr>
<td>CV (%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (16 September)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP458BR</td>
</tr>
<tr>
<td>DP655BR</td>
</tr>
<tr>
<td>DP5415</td>
</tr>
<tr>
<td>AG3601</td>
</tr>
<tr>
<td>SG747</td>
</tr>
<tr>
<td>DP33B</td>
</tr>
<tr>
<td>DP451BR</td>
</tr>
<tr>
<td>BNXN47</td>
</tr>
<tr>
<td>STV4691B</td>
</tr>
<tr>
<td>DP388</td>
</tr>
<tr>
<td>DP428B</td>
</tr>
<tr>
<td>SG215BR</td>
</tr>
<tr>
<td>STV474</td>
</tr>
<tr>
<td>DP422BR</td>
</tr>
<tr>
<td>LSD*</td>
</tr>
<tr>
<td>OSL**</td>
</tr>
<tr>
<td>CV (%)§</td>
</tr>
</tbody>
</table>

*Least Significant Difference (LSD); **Observed Significance Level at the 0.05 level; §Coefficient of Variation
Figure 12. Lint yield as affected by irrigation termination dates for each variety, MAC, 2002.

Figure 13. Mean lint yield as affected by irrigation termination dates for all varieties, MAC, 2002.
Table 32. Experimental effects and statistical significance from the analysis of variance on micronaire, irrigation termination by variety, YVAC, 2001.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0190</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0018</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.3980</td>
</tr>
</tbody>
</table>

Table 33. Main effect results of micronaire for irrigation termination dates and varieties, for cotton planted (water-up) on 21 March YVAC, 2001

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.91 b</td>
</tr>
<tr>
<td>2</td>
<td>5.09 a</td>
</tr>
<tr>
<td>3</td>
<td>4.99 a</td>
</tr>
<tr>
<td>LSD*</td>
<td>0.1164</td>
</tr>
<tr>
<td>OSL**,</td>
<td>0.0190</td>
</tr>
<tr>
<td>CV(%)§</td>
<td>5.63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variety</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 747</td>
<td>5.22 a</td>
</tr>
<tr>
<td>STV 474</td>
<td>5.18 a</td>
</tr>
<tr>
<td>SG 501BR</td>
<td>4.98 b</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>4.85 bc</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.77 c</td>
</tr>
<tr>
<td>LSD</td>
<td>0.3243</td>
</tr>
<tr>
<td>OSL</td>
<td>0.0018</td>
</tr>
<tr>
<td>CV(%)</td>
<td>4.58</td>
</tr>
</tbody>
</table>

*Least Significant Difference (LSD)

**Observed Significance Level at the 0.05 level.

§Coefficient of Variation

Table 34. Micronaire results for all varieties by irrigation termination dates, YVAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (12 July)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 747</td>
<td>5.23</td>
</tr>
<tr>
<td>STV 474</td>
<td>5.00</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>4.87</td>
</tr>
<tr>
<td>SG 501BR</td>
<td>4.75</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.68</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (22 July)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV 474</td>
<td>5.35</td>
</tr>
<tr>
<td>SG 747</td>
<td>5.22</td>
</tr>
<tr>
<td>SG 501BR</td>
<td>5.13</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.92</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>4.82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (20 August)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV 474</td>
<td>5.18</td>
</tr>
<tr>
<td>SG 747</td>
<td>5.15</td>
</tr>
<tr>
<td>SG 501BR</td>
<td>5.05</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>4.88</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.70</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.3980)
Figure 14. Micronaire values as affected by irrigation termination date for each variety, YVAC, 2001.

Figure 15. Mean micronaire values as affected by irrigation termination dates for all varieties, YVAC, 2001.
Table 35. Micronaire results by variety for each irrigation termination date, YVAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date * Variety</th>
<th>DP 422BR</th>
<th>DP 451BR</th>
<th>SG 501BR</th>
<th>SG 747</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (12 July)</td>
<td>4.68</td>
<td>4.87</td>
<td>4.75</td>
<td>5.28</td>
<td>5.00</td>
</tr>
<tr>
<td>2 (27 July)</td>
<td>4.93</td>
<td>4.83</td>
<td>5.13</td>
<td>5.23</td>
<td>5.35</td>
</tr>
<tr>
<td>3 (20 September)</td>
<td>4.70</td>
<td>4.88</td>
<td>5.05</td>
<td>5.15</td>
<td>5.18</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.3980)

Table 36. Experimental effects and statistical significance from the analysis of variance on lint yield, irrigation termination by variety, YVAC, 2001.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.2801</td>
</tr>
<tr>
<td>Variety</td>
<td>0.5930</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.1026</td>
</tr>
</tbody>
</table>

Table 37. Main effect results of yield for irrigation termination dates and varieties for cotton planted (water-up) on 21 March, YVAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>lbs. lint/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (17 July)</td>
<td>1816</td>
</tr>
<tr>
<td>2 (27 July)</td>
<td>1818</td>
</tr>
<tr>
<td>3 (20 September)</td>
<td>1942</td>
</tr>
</tbody>
</table>

LSD NS  
OSL** 0.2801  
CV(%)§ 10.9

<table>
<thead>
<tr>
<th>Variety</th>
<th>lbs. lint/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP451BR</td>
<td>1843</td>
</tr>
<tr>
<td>STV474</td>
<td>1892</td>
</tr>
<tr>
<td>DP422BR</td>
<td>1801</td>
</tr>
<tr>
<td>SG747</td>
<td>1936</td>
</tr>
<tr>
<td>SG501BR</td>
<td>1890</td>
</tr>
</tbody>
</table>

LSD NS  
OSL 0.5930  
CV(%) 11.7

*Least Significant Difference – means followed by the same letter are not significantly different according to a Fishers mean separation test at 0.05 level.  
**Observed Significance Level.  
§Coefficient of Variation
Table 38. Yield results by variety for each irrigation termination date for cotton planted on 21 March, YVAC, 2001.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>DP 422BR</th>
<th>DP 451BR</th>
<th>SG 501BR</th>
<th>SG 747</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (17 July)</td>
<td>1785</td>
<td>1626</td>
<td>1888</td>
<td>1966</td>
<td>1817</td>
</tr>
<tr>
<td>2 (27 July)</td>
<td>1691</td>
<td>1858</td>
<td>1741</td>
<td>1936</td>
<td>1866</td>
</tr>
<tr>
<td>3 (20 September)</td>
<td>1928</td>
<td>2044</td>
<td>2040</td>
<td>1992</td>
<td>1908</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.1026)


<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (12 July)</th>
<th>Lint Yield (lbs. lint/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 747</td>
<td>1966</td>
</tr>
<tr>
<td>SG 501BR</td>
<td>1888</td>
</tr>
<tr>
<td>STV 474</td>
<td>1817</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>1785</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>1626</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (22 July)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV 474</td>
</tr>
<tr>
<td>SG 747</td>
</tr>
<tr>
<td>SG 501BR</td>
</tr>
<tr>
<td>DP 422BR</td>
</tr>
<tr>
<td>DP 451BR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (20 August)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV 474</td>
</tr>
<tr>
<td>SG 747</td>
</tr>
<tr>
<td>SG 501BR</td>
</tr>
<tr>
<td>DP 451BR</td>
</tr>
<tr>
<td>DP 422BR</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.1026)
Figure 16. Lint yield as affected by irrigation termination dates for each variety, YVAC, 2001.

Figure 17. Mean lint yield as affected by irrigation termination dates for all varieties, YVAC, 2001.
Table 40. Experimental effects and statistical significance from the analysis of variance on micronaire, irrigation termination by variety, YVAC, 2002.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt; F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0009</td>
</tr>
<tr>
<td>Variety</td>
<td>0.0004</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.3909</td>
</tr>
</tbody>
</table>

Table 41. Main effect results of micronaire for irrigation termination dates and varieties, for cotton planted (water-up) on 10 April, YVAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.63 b</td>
</tr>
<tr>
<td>2</td>
<td>5.16 a</td>
</tr>
<tr>
<td>3</td>
<td>5.02 a</td>
</tr>
</tbody>
</table>

LSD* 0.1405  
OSL** 0.0009  
CV(%) 4.49

<table>
<thead>
<tr>
<th>Variety</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP422BR</td>
<td>4.66 b</td>
</tr>
<tr>
<td>SG501BR</td>
<td>4.96 a</td>
</tr>
<tr>
<td>STV474</td>
<td>5.00 a</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.02 a</td>
</tr>
<tr>
<td>SG747</td>
<td>5.03 a</td>
</tr>
</tbody>
</table>

LSD 0.2414  
OSL 0.0004  
CV(%) 5.97

*Least Significant Difference (LSD)  
**Observed Significance Level at the 0.05 level.  
§Coefficient of Variation

Table 42. Micronaire results for all varieties by irrigation termination dates, YVAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (18 July)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP451BR</td>
<td>4.83</td>
</tr>
<tr>
<td>SG747</td>
<td>4.70</td>
</tr>
<tr>
<td>STV474</td>
<td>4.65</td>
</tr>
<tr>
<td>SG501BR</td>
<td>4.58</td>
</tr>
<tr>
<td>DP422BR</td>
<td>4.38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 2 (15 August)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG747</td>
<td>5.35</td>
</tr>
<tr>
<td>STV474</td>
<td>5.20</td>
</tr>
<tr>
<td>SG 501BR</td>
<td>5.18</td>
</tr>
<tr>
<td>DP 451BR</td>
<td>5.15</td>
</tr>
<tr>
<td>DP 422BR</td>
<td>4.90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Irrigation Termination Date 3 (15 September)</th>
<th>Micronaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>STV474</td>
<td>5.15</td>
</tr>
<tr>
<td>SG501BR</td>
<td>5.13</td>
</tr>
<tr>
<td>DP451BR</td>
<td>5.08</td>
</tr>
<tr>
<td>SG747</td>
<td>5.05</td>
</tr>
<tr>
<td>DP422BR</td>
<td>4.70</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.3909)
Figure 18. Micronaire values as affected by irrigation termination date for each variety, YVAC, 2002.

Figure 19. Mean micronaire values as affected by irrigation termination dates for all varieties, YVAC, 2002.
Table 43. Micronaire results by variety for each irrigation termination date, YVAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>DP422BR</th>
<th>DP451BR</th>
<th>SG501BR</th>
<th>SG747</th>
<th>STV474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (18 July)</td>
<td>4.38</td>
<td>4.83</td>
<td>4.58</td>
<td>4.70</td>
<td>4.65</td>
</tr>
<tr>
<td>2 (15 August)</td>
<td>4.90</td>
<td>5.15</td>
<td>5.18</td>
<td>5.35</td>
<td>5.20</td>
</tr>
<tr>
<td>3 (15 September)</td>
<td>4.70</td>
<td>5.08</td>
<td>5.13</td>
<td>5.05</td>
<td>5.15</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.3909)

Table 44. Experimental effects and statistical significance from the analysis of variance on lint yield, irrigation termination by variety, YVAC, 2002.

<table>
<thead>
<tr>
<th>Source of Variation (Effect)</th>
<th>OSL (Pr &gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Termination Date</td>
<td>0.0017</td>
</tr>
<tr>
<td>Variety</td>
<td>0.2235</td>
</tr>
<tr>
<td>Irrigation Termination Date * Variety</td>
<td>0.1311</td>
</tr>
</tbody>
</table>

Table 45. Main effect results of yield for irrigation termination dates and varieties for cotton planted (water-up) on 10 April, YVAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>lbs. lint/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1128 b</td>
</tr>
<tr>
<td>2</td>
<td>1587 a</td>
</tr>
<tr>
<td>3</td>
<td>1607 a</td>
</tr>
</tbody>
</table>

LSD

<table>
<thead>
<tr>
<th>Variety</th>
<th>lsb. lint/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP451BR</td>
<td>1519</td>
</tr>
<tr>
<td>STV474</td>
<td>1515</td>
</tr>
<tr>
<td>SG747</td>
<td>1487</td>
</tr>
<tr>
<td>DP422BR</td>
<td>1367</td>
</tr>
<tr>
<td>SG501BR</td>
<td>1317</td>
</tr>
</tbody>
</table>

LSD

<table>
<thead>
<tr>
<th>Variety</th>
<th>lsb. lint/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSL**</td>
<td>0.0017</td>
</tr>
<tr>
<td>CV(%)§</td>
<td>22.7</td>
</tr>
</tbody>
</table>

*Least Significant Difference – means followed by the same letter are not significantly different according to a Fishers mean separation test at 0.05 level.

**Observed Significance Level.

§Coefficient of Variation
Table 46. Yield results by variety for each irrigation termination date for cotton planted on 9 April, YVAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date</th>
<th>DP 422BR</th>
<th>DP 451BR</th>
<th>SG 501BR</th>
<th>SG 747</th>
<th>STV 474</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (18 July)</td>
<td>1098</td>
<td>1260</td>
<td>1040</td>
<td>1028</td>
<td>1212</td>
</tr>
<tr>
<td>2 (15 August)</td>
<td>1408</td>
<td>1805</td>
<td>1335</td>
<td>1691</td>
<td>1695</td>
</tr>
<tr>
<td>3 (15 September)</td>
<td>1594</td>
<td>1492</td>
<td>1574</td>
<td>1741</td>
<td>1638</td>
</tr>
</tbody>
</table>

Irrigation Termination Date * Variety = NS (OSL = 0.1311)

Table 47. Micronaire results for all varieties by irrigation termination dates, YVAC, 2002.

<table>
<thead>
<tr>
<th>Irrigation Termination Date 1 (18 July)</th>
<th>Lint Yield (lbs. lint/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP451BR</td>
<td>1260</td>
</tr>
<tr>
<td>STV474</td>
<td>1212</td>
</tr>
<tr>
<td>DP422BR</td>
<td>1098</td>
</tr>
<tr>
<td>SG501BR</td>
<td>1040</td>
</tr>
<tr>
<td>SG747</td>
<td>1028</td>
</tr>
</tbody>
</table>

Irrigation Termination Date 2 (15 August)

| DP451BR | 1805 |
| STV474  | 1695 |
| SG747   | 1691 |
| DP422BR | 1408 |
| SG501BR | 1335 |

Irrigation Termination Date 3 (15 September)

| SG747   | 1741 |
| STV474  | 1638 |
| DP422BR | 1594 |
| SG501BR | 1574 |
| DP451BR | 1492 |

Irrigation Termination Date * Variety = NS (OSL = 0.1311)
Figure 20. Lint yield as affected by irrigation termination dates for each variety, YVAC, 2002.

Figure 21. Mean lint yield as affected by irrigation termination dates for all varieties, YVAC, 2002.
Figure 22. Grand mean of micronaire values as affected by irrigation termination dates for all varieties, MAC, 2000-2002.

Figure 23. Grand mean of lint yields as affected by irrigation termination dates for all varieties, MAC, 2000-2002.
Figure 24. Grand mean of micronaire values as affected by irrigation termination dates for all varieties, YVAC, 2001-2002.

Figure 25. Grand mean of lint yields as affected by irrigation termination dates for all varieties, YVAC, 2001-2002.
Figure 26. Relationship between fiber micronaire and heat units accumulated from planting (PD) to final irrigation (IT), MAC and YVAC, 2000-2002.

Figure 27. Relationship between lint yield and heat units accumulated from planting (PD) to final irrigation (IT), MAC and YVAC, 2000-2002.