

# The 1998 Arizona Cotton Advisory Program

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## **Abstract**

*Arizona Cooperative Extension generates and distributes weather-based Planting Date and Cotton Development Advisories for 19 cotton production areas (Aguila, Buckeye, Cochise Co., Coolidge, Eloy, Greenlee, Co., Harquahala, Laveen, Litchfield Pk., Marana, Maricopa, Mohave Valley, Paloma, Parker, Pinal Co., Queen Creek, Roll, Safford and Yuma Valley). Planting Date Advisories are distributed from legal first planting date until the end of April and provide updates on heat-unit-based planting windows, recent and forecasted weather conditions, heat unit accumulations, variety selection, soil temperatures, recommended plant population, and early insect management and control. Cotton Development Advisories are distributed from early May through the end of August and provide updates on crop development, insects, weather and agronomy. The Cotton Advisory Program will continue in 1998, and growers may obtain advisories by mail/fax from local extension offices or by computer from the AZMET Internet Web Page (<http://ag.arizona.edu/azmet>) and AZMET Computer Bulletin Board System. Program changes planned for 1998 include 1) an expanded weather information update and 2) the addition of an advisory for the Buckeye area.*

## **Introduction**

Arizona Cooperative Extension has published and distributed weekly weather-based advisories for Arizona cotton producers since 1991. This program will again be provided for growers and others in the agribusiness community in 1998. This document briefly reviews the advisory program, then details plans for the 1998 program.

## **Advisory Content**

The Cotton Advisory Program provides cotton growers weekly updates on crop development, agronomy, pests and weather from mid-February until the end of August. Two related but distinct advisories are used during the season-long program: the Planting Date Advisory and the Cotton Development Advisory. The Planting Date Advisory (Figure 1) is generated each Monday from the start of the planting season until late April or early May (depending on location) and emphasizes planting cotton in windows defined by heat unit (HU, 86° /55°F thresholds) accumulations rather than calendar dates. The HU windows identify planting periods which typically result in optimal performance for short, medium and full season cotton varieties. A simple graph showing annual HU accumulation and the planting windows is used to illustrate the proper planting time (Figure 1).

The remainder of the Planting Date Advisory is devoted to weekly updates on 1) weather conditions (current situation, long-term normals and 5-day forecast), 2) early season pest management, and 3) agronomy. Among the topics discussed in the Planting Date Advisories are variety selection, seeding rates, plant population, optimal planting conditions for rapid and uniform germination and early season crop phenology.

Cotton Development Advisories are issued beginning in late April or early May and provide growers information on cotton development, pest management, and season-long crop management (Figure 2). A simple graph tracking HU accumulation for cotton crops planted on five (four at high elevation areas) representative planting dates is located at the top of the advisory (Figure 2). HU-based development time lines are used to indicate when growers should expect particular phenological or physiological events such as pinhead square, susceptible square, first flower, peak bloom, cut-out, etc.

The text portion of the Cotton Development Advisory is similar to that of the Planting Date Advisory and provides updates on weather (both normal and forecasts), insects and cotton agronomy. Estimates of cotton water use are added to the weather section to assist growers with irrigation management, and regular updates on the heat stress conditions are provided during monsoon. Insect updates discuss appropriate scouting and control measures for pink bollworm, whitefly, lygus, aphids and other insect pests. The Agronomy Update provides details on nitrogen and water management, factors impacting fruit retention, crop monitoring techniques, identification of cut-out, timing of terminal irrigations and defoliation strategies.

### **Advisory Development and Distribution**

The data processing center (DPC) of the Arizona Meteorological Network (AZMET) serves as the site for advisory development. Because the advisories make use of near-real time weather information (e.g., HUs, soil temperatures, evapotranspiration, humidity and rainfall), the presence of a local AZMET weather station is a prerequisite for advisory development. Table 1 lists 19 locations served by the program, and the AZMET weather stations serving each location.

Advisories are developed each Monday morning in the following manner. First, AZMET personnel summarize the previous week's data and make the necessary computations of weather-based variables. Second, Extension Specialists in entomology and cotton agronomy submit their respective weekly updates to the AZMET DPC for inclusion in the advisories. AZMET personnel then develop, proof and print the advisories for each region. The advisories are either sent via the Internet or facsimile machine to each county extension office on Monday afternoon where local modifications are made prior to distribution to growers. The level of local modification varies with county but generally consists of additional information on local production or pest problems and inclusion of brief, one-page reports on cotton management and/or market information.

Growers interested in accessing advisories by computer have two options -- the AZMET Internet Web Page located at <http://ag.arizona.edu/azmet> or the AZMET Computer Bulletin Board. Advisories are placed on each computer system on Monday afternoon and remain on the system through Saturday of each week. Procedures for accessing these two systems are provided later in this publication.

### **The 1998 Cotton Advisory Program**

Changes planned for the 1998 Cotton Advisory Program include the addition of advisories for the Buckeye, Coolidge, Eloy and Maricopa areas; and an expanded Weather Update on both advisory formats. The Buckeye advisory will utilize weather data from a new AZMET station that was installed in the area in January of 1998. Advisories for Coolidge, Eloy and Maricopa will utilize weather information from existing AZMET weather stations and are being developed to provide Pinal County growers with more localized information. Pinal County has been served in past years by a single advisory that provided average countywide weather conditions derived from the Coolidge, Eloy and Maricopa AZMET stations.

The expanded Weather Update section will summarize normals and 1997 data for the coming week as well as weather conditions observed for the past week. Information provided in the Weather Update will include maximum, minimum and dew point temperatures; heat unit accumulation; precipitation; and heat stress conditions. Heat stress

conditions will be summarized using a crop temperature/ heat stress model that uses AZMET's temperature and humidity data.

Aside from the changes mentioned above, 1998 Cotton Advisory Program will resemble the 1997 program. The weather, insect and agronomy updates will remain in the same order, and their content will change as 1998 conditions dictate. Each county extension office will continue to have the option of localizing the advisory. This may involve making additions and/or adjustments to fine tune the advisory for local conditions. An example of localization might be the inclusion of control recommendations for a local pest outbreak or announcements about upcoming workshops and/or meetings.

## **How To Obtain The 1998 Cotton Advisories**

Growers and other interested individuals may obtain advisories from three sources: 1) local county extension offices, 2) AZMET's Internet Web Page and 3) AZMET's Computer Bulletin Board System. Procedures required to access advisories from each source are provided below.

### **County Extension Offices**

The bulk of the advisories are delivered to clientele via local county extension offices. Access via the county office allows recipients to benefit from any local information generated/provided by local extension personnel. These local modifications/additions are presently available only from county extension offices (not available via computer sources). Most county offices distribute advisories through regular weekly mailings. Delivery via facsimile machine is offered in some circumstances. Individuals interested in receiving the advisories via county extension offices should contact their local office for details.

### **Access Via The AZMET Internet Web Page**

The Arizona Meteorological Network (AZMET) now provides access to AZMET information and the Weekly Cotton Advisories via the AZMET Internet Web Page. The AZMET Web Page URL address is:

**<http://ag.arizona.edu/azmet>**

To access the advisories, proceed to the bottom of the main web page (contains the map showing AZMET station locations). Locate the section labeled "Special Reports" and click on "Cotton Advisores" to access to the Cotton Advisories sub-page. Identify the location of interest and then click on the word "Current" to view this week's advisory. Advisories from previous weeks and an advisory designed for use with the Adobe Acrobat Reader are also available for each location.

You may also retrieve cotton advisories by selecting the location of interest from the station list located left of the state map. A description of the AZMET station location and a listing of available data files is followed by the heading "Special Reports" which provides access to Cotton Advisory sub-page.

The AZMET Web Page also provides an FTP site for individuals interested in downloading files. Specifics on the FTP site are as follows:

Host Name: ag.arizona.edu  
Host Type: automatic detect  
User ID: anonymous  
Password: guest  
Initial Directories at Remote Host: /pub/azmet

The file **cotton.txt** in the Documentation directory provides the proper filenames for the cotton advisories.

Individuals planning to generate hard copy output of advisories downloaded from the AZMET Web Page must adjust their printer settings. Page length, print typeface and type pitch must be adjusted in order to generate a one-page hard copy report. Specific details and recommended printer settings are provided in the next section entitled "AZMET Computer Bulletin Board".

### **AZMET Computer Bulletin Board**

A third means of obtaining cotton advisories is to view/download them off the AZMET Computer BBS located in Tucson. A personal computer, modem, communications software and access to a phone line are required to use the AZMET BBS. Use of the AZMET BBS is free; users pay long distance phone charges if applicable. Table 2 lists the equipment, communications requirements and phone numbers necessary to access the AZMET BBS.

The AZMET BBS is the computer equivalent of a standard wall bulletin board. The BBS is subdivided into specific regions or file areas which serve as repositories for weather information. A file area is provided for each weather station in the AZMET system. Computer files (ASCII text files) containing information obtained from a particular AZMET station are stored within each file area. Users may view or download any file stored on the BBS, provided they know the filename. The filename for the cotton advisories will be **COTTON.RPT**.

To view or download a cotton advisory, users must first enter the file area holding the advisory (location) of interest (Table 3). Once in the correct file area, the user can view (using the Type command) or download (using the Download command) the advisory by entering **COTTON.RPT** when prompted by the AZMET BBS to enter a filename.

If a user downloads the advisory to their computer and plans to generate a hard copy report, some changes in the normal printer setup will be necessary to print out a functional final copy that fits on one page. The first required adjustment is to change the number of lines per page from 60 (normal default) to 76. This is necessary to get the entire advisory printed on one page. Print typeface represents the next likely printer adjustment. **Do not use a proportional spaced typeface!** Instead, set the printer to a non-proportional or monospaced typeface. **When using laser printers, Courier typeface works well.** The final setting that may need adjustment is the type pitch (characters per inch). A type pitch setting of 11 or 12 is recommended; a setting of 10 may result in truncated lines.

The advantage of accessing advisories via AZMET is same-day delivery. AZMET places the completed advisories on the Internet Web Page and BBS shortly after noon each Monday. However, it is important to note that advisories obtained from the AZMET BBS will not contain localized information added at county extension offices. Growers interested in this local information will need to obtain advisories from their local extension office. Users of the BBS should also note that cotton advisories will be developed only for the 19 locations listed in Table 3. In situations where an advisory covers a region that is served by more than one AZMET weather station, the advisory will be stored in all relevant file areas (Table 3). For example, the Yuma Valley advisories will be placed in the Yuma Valley, Yuma Mesa and Yuma North Gila file areas.

Table 1.

Locations covered by the 1998 Cotton Advisory Program and the AZMET weather station(s) serving each location. Buckeye will be added to the program for the first time in 1998. Individual advisories will be developed for Coolidge, Eloy and Maricopa in 1998.

| <u>Location</u> | <u>AZMET Station(s)</u> |
|-----------------|-------------------------|
| Aguila          | Aguila                  |
| Buckeye**       | Buckeye                 |
| Cochise Co.     | Bonita                  |
| Coolidge        | Coolidge                |
| Eloy            | Eloy                    |
| Greenlee Co.    | Duncan NOAA*            |
| Harquahala      | Harquahala              |
| Laveen          | Laveen                  |
| Litchfield Pk.  | Litchfield Pk.          |
| Marana          | Marana                  |
| Maricopa        | Maricopa                |
| Mohave Valley   | Mohave                  |
| Paloma          | Paloma                  |
| Parker Valley   | Parker (Poston)         |
| Pinal County    | Maricopa/Coolidge/Eloy  |
| Queen Creek     | Queen Creek             |
| Safford         | Safford                 |
| Roll            | Roll                    |
| Yuma Valley     | Yuma Valley             |

\*NOAA National Weather Service Data (No AZMET Station)

\*\*Advisory Program will expand to Buckeye in 1998.

Table 2.

Information required to access the AZMET computer bulletin board system.

**Computer Hardware Requirements**

Personal Computer, Modem & Phone Line

**Computer Software Requirements**

Communications Software (comes with most modems)

**Communications Parameters**

Character Size: 8 Bits

Parity: None

Number of Stop Bits: 1

Transmission Speed: 300-2400 bits/sec

**Phone Numbers**

AZMET BBS (computer calls only): (520) 621-1197

AZMET Fax (520) 621-9796

AZMET Lab (voice calls): (520) 621-9742

(520) 621-1319

**User's Manual**

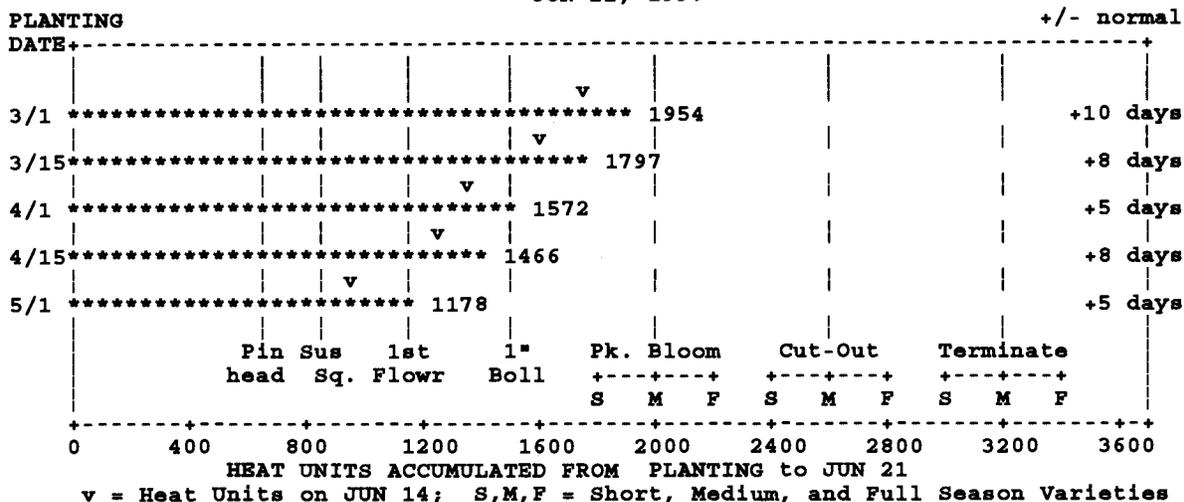
Accessing the Arizona Meteorological Network By Computer (Extension Report 8733). Author: P. Brown. Available from Agricultural Communications & Computer Support for \$5.00. Contact: Publications Distribution Center at (520) 621-1713

Table 3. AZMET file areas where each of the 1998 cotton advisories may be found. Note! The advisory will be stored under the filename COTTON.RPT in all AZMET File Areas.

| <u>Location of Cotton Advisory</u> | <u>AZMET File Area(s) Where Advisory May Be Found</u> |
|------------------------------------|---|
| Aguila                             | Aguila  |
| Buckeye                            | Buckeye   |
| Cochise Co.                        | Bonita  |
| Coolidge                           | Coolidge  |
| Eloy                               | Eloy  |
| Greenlee Co.                       | Greenlee  |
| Harquahala                         | Harquahala  |
| Laveen                             | Laveen  |
| Litchfield Pk.                     | Litchfield Pk., Waddell                               |
| Marana                             | Marana, Tucson  |
| Maricopa                           | Maricopa  |
| Mohave Valley                      | Mohave Valley   |
| Paloma                             | Paloma  |
| Parker Valley                      | Parker  |
| Queen Creek                        | Queen Creek   |
| Roll                               | Roll  |
| Safford                            | Safford   |
| Yuma Valley                        | Yuma Valley, Mesa, North Gila                         |



LITCHFIELD COTTON DEVELOPMENT ADVISORY  
JUN 22, 1997



INSECT UPDATE

Sweep for Lygus; treat if there are 15-20 total Lygus/100 sweeps. Fields near recently cut alfalfa may harbor high, yet temporary, populations of adults. Check for nymphs & survey for damaged squares (25%) before treating. Stink bugs may also be present & require earlier control (10-15/100 sweeps). Look for recently aborted bolls & crack 1" bolls for PBW. In non-Bt cotton, treat when 10% contain live PBW. Bt cotton should not require sprays for PBW, unless over 10% of the bolls are infested with "pink" larvae (>2nd instar). Consider IGRs when there are 3-5 SWF adults per leaf & 1 large, visible nymph per disk on the 5th main stem leaf below the terminal OR 39-57% infested leaves (with 3 or more adults) & 40% infested disks (with 1 or more nymphs) in 30 samples (pce 6/22).

JUN 22 - JUN 28 WEATHER

|              | HIGH | LOW | WEEK HEAT UNITS |
|--------------|------|-----|-----------------|
| 30 yr Norm.: | 107  | 69  | 179             |
| Last Year :  | 100  | 63  | 156             |

WEATHER UPDATE, STATISTICS & ESTIMATED COTTON WATER USE

Sunny and dry weather with hot days and mild nights. Little chance for rain in western production areas; slight chance for rain in the higher elevation areas of southeast AZ. Warm and dry weather is considered ideal for cotton. Heat stress is unlikely as long as humidity remains low and the crop remains well watered. It appears we will have at least one more week of good cotton weather before any significant moisture enters the state. However, the forecast for late this week shows some moisture leaking into southeast AZ. The normal first appearance of monsoon moisture is the July 5-10, depending on location.

Heat Units (HU) are running about 8 days ahead of normal. HU last week = 165. Heat Unit accumulation since Jan 1 = 2193; Last year = 2258; 30 year normal = 2012.

|                        |       |       |       |       |       |
|------------------------|-------|-------|-------|-------|-------|
| Planting date :        | 3/1   | 3/15  | 4/1   | 4/15  | 5/1   |
| Water Use (last week): | 2.78" | 2.45" | 1.98" | 1.76" | 1.16" |

AGRONOMY UPDATE

Fields should be in early bloom by the time they reach approximately 1500 heat units accumulated since planting (HUAP). At this stage of the fruiting cycle, we would like to see about 75% fruit retention (FR) in the first two fruiting positions. The number of nodes above the top white flower (NAWF) should be about 7 to 8 at early bloom. If the NAWF is <7 at 1,500 HUAP this could be due to low vigor conditions, which can be checked with a height to node ratio (HNR). HNR values at early bloom should be about 1.3. If FR and HNRs are low, plant vigor is needed, requiring good irrigation (no stress) and fertilization management. Splitting applications of N (about 50 lbs. N/acre/app.) based upon crop conditions provides good efficiency and control. (JCS 6/21/97)

Figure 2. Example of a 1997 Cotton Development Advisory for Litchfield Park.