

# The 1999 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, , 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 early September and provide updates on crop development, insects, weather and agronomy. The Cotton Advisory Program will continue in 1999, 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>). Major program changes planned for 1999 include 1) use of historical AZMET weather data for local normals and 2) elimination of the computer bulletin board as a computer-based means of retrieving the advisories.*

## **Introduction**

Arizona Cooperative Extension has published and distributed weekly, weather-based advisories for Arizona cotton producers since 1991. The advisory program will continue in 1999 with only minor changes. This document provides a brief summary of the advisory program, then details plans for the 1999 program.

## **Advisory Content**

The Cotton Advisory Program provides cotton growers weekly updates on crop development, agronomy, pests and weather from mid-February until early September. 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). Heat-unit-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 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 may use the AZMET Internet Web Page which carries the URL address of **<http://ag.arizona.edu/azmet>**. Advisories are placed on the Internet page at noon each Monday and remain on the system through Saturday of each week. Procedures for retrieving advisories from the Internet are provided later in this publication.

### **The 1999 Cotton Advisory Program**

The 1999 Cotton Advisory Program will function in much the same manner as the 1998 program with the exceptions that 1) the advisories will no longer be available via the AZMET Computer Bulletin Board and 2) AZMET will utilize more relevant weather normals for most advisory locations. AZMET will shut down the aging computer bulletin board on 1 April 1999 and transfer all computer-based dissemination activities to its Internet Web Page at that time. The advisories have been available via the Internet for several years and details on retrieving the advisories via the AZMET Internet Web Page are provided later.

The accuracy of weather normals presented in the advisories has been an issue of some concern for several years. Since the start of the advisory program, AZMET has relied on normal temperature data obtained from the nearest NOAA Cooperative Observer. Unfortunately, NOAA data are often collected in urban or other settings that are not representative of local agriculture. For 1999, AZMET will begin to use weather normals based on AZMET's historical data sets. Many AZMET stations now have in excess of 10 years of data; thus, AZMET normals should prove more relevant than NOAA normals for the advisories. Only advisories developed for locations with recently installed weather stations (e.g. Roll, Buckeye, Harquahala and Queen Ck.) will continue to present normals based on NOAA data.

Aside from the changes mentioned above, 1999 Cotton Advisory Program will resemble the 1998 program. The weather, insect and agronomy updates will remain in the same order, and their content will change as 1999 conditions dictate. Each county extension office will continue to have the option of localizing the advisory, which may involve making additions and/or adjustments to fine tune the advisory for local conditions.

### **How To Obtain The 1999 Cotton Advisories**

Growers and other interested individuals may obtain advisories from two sources: 1) AZMET's Internet Web Page, and 2) County Extension Offices. Procedures required to access advisories from each source are provided below.

#### **The AZMET Internet Web Page**

The Arizona Meteorological Network provides access to the cotton advisories via the AZMET Internet Web Page. The AZMET Web Page URL address is:

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

To access the advisories, simply log on to your Internet service provider and enter the URL address provided above. The Main AZMET Web Page will appear on your screen. The main page contains a box labeled **Weekly Cotton Advisories.** Simply click on this button to access to the Cotton Advisories sub-page. Identify the advisory location of interest and then click on the word "Current" to view this week's advisory. Advisories from past weeks, last year and a current advisory designed for use with the Adobe Acrobat Reader are also available for each location.

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 may need to adjust their printer settings for page length, print typeface and type pitch to obtain a usable report. Adjust the page length from 60 lines per page (normal default) to 76. Lengthening the page is necessary to get the entire advisory printed on one page. Adjust the typeface to a non-proportional or mono-spaced typeface. **Courier typeface works well! Do not use a proportional spaced typeface as the graph and columns will become distorted!** Finally, adjust the type pitch (characters per inch) to a setting of 11 or 12; a setting of 10 may result in truncated lines.

The advantage of accessing advisories via the Internet is same-day delivery. AZMET places the completed advisories on the Internet at noon each Monday. It is important to note that advisories obtained from the Internet 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.

### **County Extension Offices**

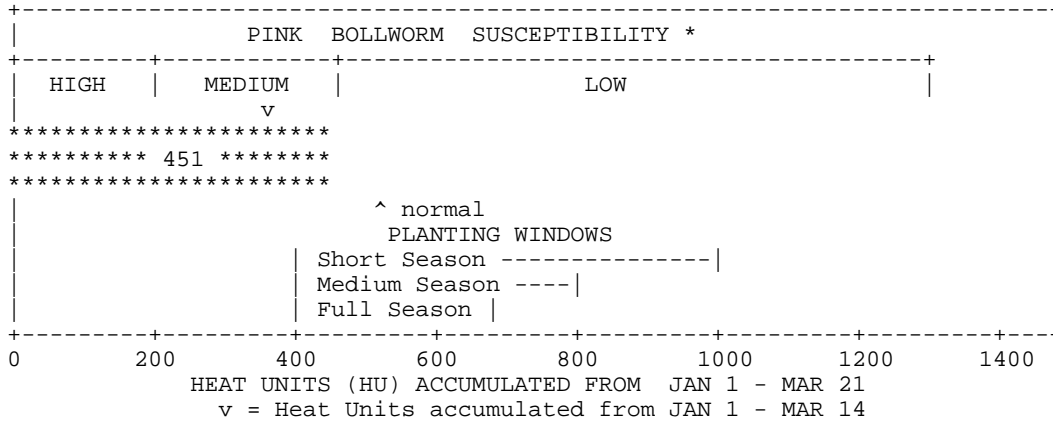
A significant number of advisories are delivered to clientele via local county extension offices. Access via the county office allows recipients to benefit from any local information generated/provided by local extension personnel. These local modifications/additions are presently available only from county extension offices (not available from the Internet). 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.

station(s) serving each location. Pinal County advisory uses averaged weather data from the Coolidge, Eloy and Maricopa stations.

<b><u>Location</u></b>		<b><u>AZMET Station(s)</u></b>
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)

YUMA VALLEY                      MAR 22, 1998  
COTTON PLANTING DATE ADVISORY



\* HIGH:>50%, MEDIUM:25-50%, LOW<25% Spring Emergence after Susceptible Square

PLANTING INFORMATION

Best Conditions for Control of Cotton Root Knot Nematode by Fumigation

Fields that have been tested and have detectable levels of cotton root knot nematodes in the soil should be considered for preplant fumigation with Telone. Optimum conditions for application are: (1) soil moisture at 50% field capacity to allow optimum movement of fumigant through soil pores; (2) absence of any cotton trash, especially whole roots, that will bind the chemical and prevent good coverage; (3) soil temperatures between 60oF and 80oF, because cooler temperatures result in poor fumigant movement and warmer temperatures increase fumigant losses; and (4) application 10-14 days before planting. (MO 3/16)

WEATHER UPDATE

Last Week : MAR 15 - MAR 21					This Week : MAR 22 - MAR 28					
	HIGH	LOW	DEWPT	HUS	RAIN		HIGH	LOW	DEWPT	HUS
Normal	79	47	--	69	----	Normal	81	49	--	81
Recorded	77	49	47	65	0.00	1997	82	52	41	91

HUs are running about 10 days behind normal.

FORECAST:

Sunny and very warm through Wednesday. Much cooler with a chance for showers late in the week. The storm track is expected to drop into Arizona Thursday, bringing much cooler weather and a chance for thunderstorms. A second storm is projected to enter the state on Sunday, bringing another chance for showers.

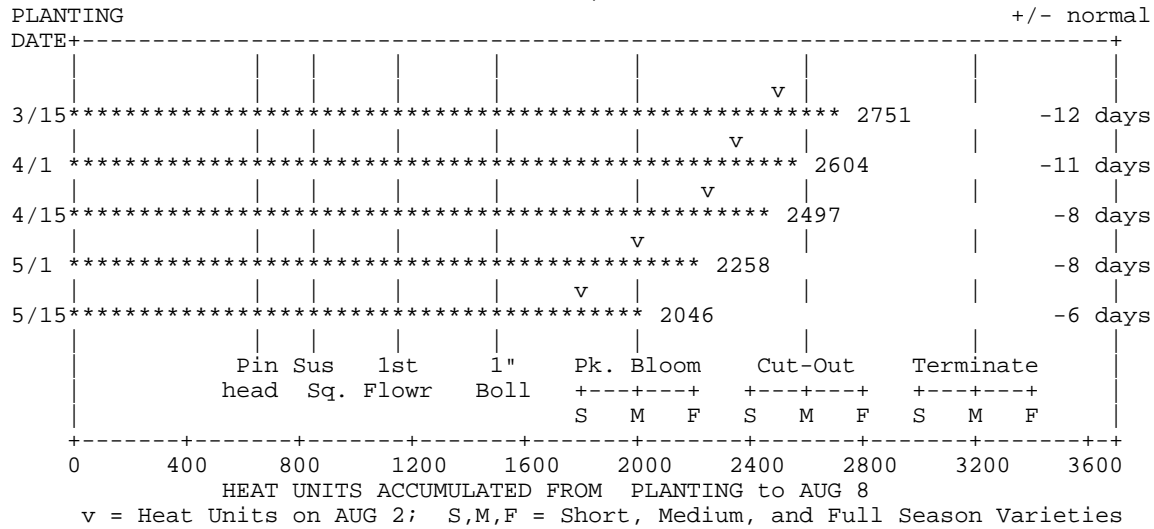
Last Week's 8am Soil Temp: Max = 63.8 MAR 18 ; Min = 56.6 MAR 15

AGRONOMY UPDATE

Optimum stand populations for cotton can range from 25,000 to 50,000 plants per acre (ppa) for most varieties. Minimum average populations for cotton are commonly identified at about 20,000 ppa. Adjusting seeding rates during the early stages of planting must take into account a number of factors such as: general seedling vigor of the variety being used, soil temperatures, soil salinity, herbicide program, etc.. When faced with more adverse factors, a higher seeding rate will be needed. For example, if a stand of 40,000 ppa is a target, the variety has 5,000 seeds/pound, a successful emergence rate of 50% may would require only 16 lbs. seed/acre. An emergence rate of 25% would require 32 lbs./acre. (JCS 3/22/98)

Figure 1. Example of a 1998 Planting Date Advisory for Yuma Valley.

PARKER COTTON DEVELOPMENT ADVISORY  
AUG 9, 1998



INSECT UPDATE

For WF control, IGRs are effective, economical & help to prevent sticky cotton. IGRs sprayed first ensure greater predator activity against WFs & other pests. WF adulticides mixed with IGRs are destructive to beneficial fauna & reduce the effective "residual" of IGRs. The decision to choose IGRs should consider the number of days from initial use to green-leaf drop. If this period exceeds 30 days, at least 1 IGR should be used & should prove cost-effective. To properly time IGR sprays, sample both adults & nymphs on the 5th mainstem leaf below the terminal; spray when 40% leaves have 3 or more WF adults (12 leaves out of 30; or 3-5 adults/leaf) AND 40% leaf disks (quarter-size) have 1 or more large visible nymphs (12 out of 30 disks; or 1 large nymph/disk) (pce 8/10).

WEATHER UPDATE, STATISTICS & ESTIMATED COTTON WATER USE

Last Week : AUG 2 - AUG 8					This Week : AUG 9 - AUG 15					
	HIGH	LOW	DEWPT	HUS	RAIN		HIGH	LOW	DEWPT	HUS
Normal	107	77	60	201	----	Normal	105	76	62	197
Recorded	107	74	65	195	0.00	1997	106	75	65	196

Another hot and humid week is expected across much of Arizona. Expect mostly sunny skies with near normal temperatures and moderate to high dew points. Scattered thunderstorms are possible each day, but will remain most prevalent in higher elevation areas and southeast AZ. Long range forecasts predict an increase in temperatures and precipitation for the Colorado River Valley by the end of the week.

Heat Units (HU) are running about 15 days behind normal. HU last week = 195. Heat Unit accumulation since Jan 1 = 3086; Last year = 3507; 30 year normal = 3536.

Planting date :	3/15	4/1	4/15	5/1	5/15
Water Use (last week):	2.53"	2.53"	2.53"	2.53"	2.51"

AGRONOMY UPDATE

Plant progression through the fruiting cycle can be monitored by the number of nodes above the (first position) top white flower (NAWF). When the NAWF is about 7-8, the crop is in peak bloom. When the NAWF is 5 or less the crop is rapidly progressing toward cut-out. Fields normally show signs of progressing into cut-out by the time about 2500 heat units after planting (HUAP) have been accumulated. In some cases this season crop maturity is slow in relation to HUAP values. This can be due to variety type, fruit retention (FR) levels, and crop vigor (height to node ratios, HNR). Many fields have rather low FR and high HNR levels. It is important to monitor field conditions. Boll counts of 15-20 bolls/ft. estimate about 1 bale/acre yield potential. (JCS 8/8/98)

Figure 2. Example of a 1998 Cotton Development Advisory for Parker.