

# The Arizona Cotton Advisory Program

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## **Abstract**

*Arizona Cooperative Extension generates and distributes weather-based Planting Date and Cotton Development Advisories for 10 cotton production areas (Marana, Litchfield Pk., Pinal Co., Parker, Safford, Yuma Valley, Dateland and Aguila). Planting Date Advisories are distributed from mid-February through the end of April and stress 1) planting all (particularly full season varieties) cotton varieties according to heat unit accumulations rather than calendar date and 2) the importance of soil temperature to good germination. Cotton Development Advisories are distributed from early May through mid-September and provide updates on crop development, insects, weather and agronomy to growers. The Cotton Advisory Program will continue in 1993 and growers may obtain the advisories by mail (fax only in Yuma County only) from the local county extension office or by computer from the AZMET computer bulletin board.*

## **Introduction**

Arizona Cooperative Extension has published and distributed weekly weather-based advisories for Arizona cotton producers since 1991. Favorable response from growers and others in the agribusiness community have provided the impetus to continue the advisory program in 1993. This document briefly reviews the advisory program, then details plans for the 1993 program, including how growers may obtain the advisory.

## **Advisory Content**

The Cotton Advisory Program provides cotton growers weekly updates on crop development, agronomy, pests and weather from mid-February to mid-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 is generated each Monday from mid-February 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 represent a compromise position between planting early for maximum yield performance and planting late to avoid early season pink bollworm (PBW) infestations. A simple graph showing annual HU accumulation and the desired planting window is used to illustrate the proper planting time for full season varieties (Figure 1).

The remainder of the Planting Date Advisory is devoted to weekly updates on 1) weather (normal temperatures, and HU accumulation for the upcoming week and the current 5-day forecast from the National Weather Service), 2) PBW spring emergence and 3) agronomy. The importance of soil temperature to rapid and uniform germination is stressed in the weekly agronomy updates.

Cotton Development Advisories are issued beginning in late April or early May and provide growers information on cotton and PBW development, and season-long crop management (Figure 2). A simple graph tracking HU accumulation for cotton crops planted on four representative planting dates is located at the top

of the advisory. HU-based development timelines are used to indicate when growers should expect particular phenological or physiological events such as pinhead square, susceptible square, first flower, cutout, 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. Insect updates track emergence of various PBW generations using HUs and discuss appropriate scouting and control measures for PBW, sweet potato whitefly and other insect pests. The cotton agronomy update provides details on nitrogen and water management, identification of cutout, 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, rainfall, evapotranspiration), the presence of a local AZMET weather station is a prerequisite for advisory development. Table 1 lists ten cotton growing regions and the AZMET weather stations serving each region.

The 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 then sent via 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 brief discussions of local pest problems.

The free, public access AZMET Computer Bulletin Board System (BBS) serves as a second distribution path for the weekly advisories. Advisories were placed in the appropriate BBS file areas on Monday afternoons and remain on the system through Saturday of each week. The BBS provides users the option of simply viewing the advisories on their terminal screen or downloading the file to their own computer for more permanent storage.

### **The 1993 Cotton Advisory Program**

Few changes are planned for the 1993 Cotton Advisory Program. The advisories will again be developed for the ten locations listed in Table 1. The physical appearance of the advisories will remain similar to those produced in 1992. The graphs at the top of the advisories will remain unchanged; however, the planting dates depicted in the Cotton Development Advisories for Aguila and Marana will be altered to reflect the change in legal first planting date from 15 March to 1 April. The Safford Planting Date Advisory will not show the PBW susceptibility scale and the HU-based planting window. The shorter season in Safford does not afford growers the option of adjusting planting dates to avoid PBW spring emergence and the scale and window are therefore of limited value there.

The weather, insect and agronomy updates will maintain essentially the same format. A slight change will occur in the weather section of the Cotton Development Advisory where HU accumulation since 1 January will be provided throughout the year to assist individuals tracking emergence and subsequent generations of PBW. The insect and agronomy sections will remain in the same order and their content will change as the 1993 situation dictates. 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 advisories for local conditions. An example of localization might be the inclusion of control recommendations for a local pest outbreak.

## How To Obtain The 1993 Cotton Advisories

Growers and other interested individuals may obtain advisories from their local county extension offices or the AZMET Computer Bulletin Board. Because some county agents modify the advisories with local information, the preferred method of obtaining the advisory is through the local extension offices. Most county offices distribute the advisory through regular weekly mailings. Delivery via facsimile machine is offered in some circumstances.

An alternative way to obtain the advisories is to 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.

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 10 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 Pinal County advisories will be placed in the Maricopa, Coolidge and Eloy file areas.

Table 1. The ten locations that will receive advisories during the 1993 Cotton Advisory Program and the AZMET station(s) serving each location.

<u>Location</u>	<u>AZMET Station(s)</u>
Aguila	Aguila
Dateland	Dateland/Paloma
Litchfield Pk.	Litchfield Pk./Waddell
Marana	Marana/Tucson
Paloma	Paloma
Parker Valley	Parker (Poston)
Pinal County	Maricopa/Coolidge/Eloy
Queen Creek	Queen Creek (temporary station)
Safford	Safford
Yuma Valley	Yuma Valley/Mesa/N. Gila

Table 2. Information required to access the AZMET system by computer.

**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): (602) 621-1197

AZMET Lab (voice calls): (602) 621-9742

(602) 621-1319

**User's Manual**

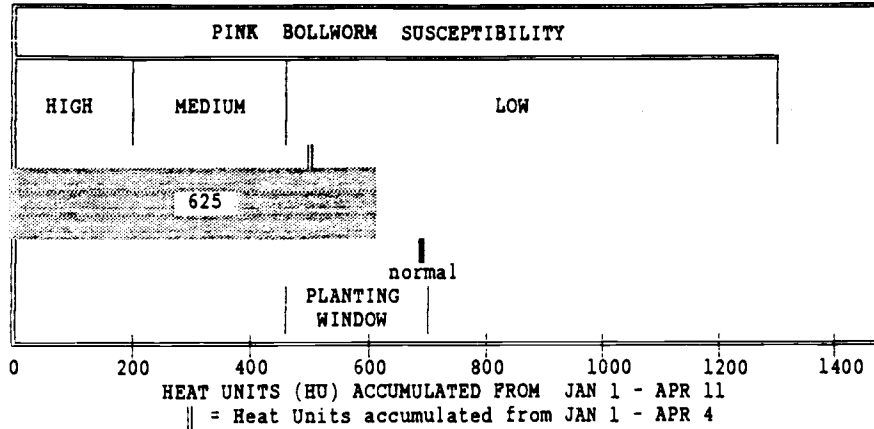
Accessing the Arizona Meteorological Network By Computer (Extension Report 8733). Author: P. Brown\*

\*Available from Agricultural Communications & Computer Support for \$5.00. Contact: Robert Cassler at (602) 621-7176.

Table 3. AZMET file areas where each of the 1993 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
Litchfield Pk.	Litchfield Pk., Waddell
Marana	Marana, Tucson
Mohave Valley	Mohave Valley
Paloma	Paloma, Dateland
Parker Valley	Parker
Pinal County	Maricopa, Coolidge, Eloy
Queen Creek	Queen Creek
Safford	Safford
Yuma Valley	Yuma Valley, Mesa, North Gila

## PLANTING DATE ADVISORY : FULL SEASON COTTON



Pink Bollworm Susceptibility (for above graph)  
 HIGH : > 50%, MEDIUM : 25-50%, LOW : < 25%  
 Spring Emergence after Susceptible Square

**INSECT INFORMATION**

Heat unit accumulation is running about 5 days behind normal.  
 Heat unit accumulation last week = 100

Spring emergence of PBW is approximately 5% complete.

The 450-700 HU planting window for full season cotton varieties will close late this week. Growers should finish planting full season varieties as soon as possible and consider medium or short maturity varieties for subsequent plantings.

APR 12 - APR 18	WEATHER		WEEK HEAT UNITS
	HIGH	LOW	
30 yr Norm.:	87	50	97
Last Year :	82	46	78

**5-DAY WEATHER FORECAST**

Mostly sunny and warm Monday with temperatures well above normal. Temperatures will cool to slightly above normal levels by mid-week, then warm up again by Friday. Slight chance of a shower in the southeast on Monday and Tuesday.

**AGRONOMY UPDATE**

Last week: Max 8am Soil Temp = 61.7 : APR 9  
 Min 8am Soil Temp = 60.3 : APR 5

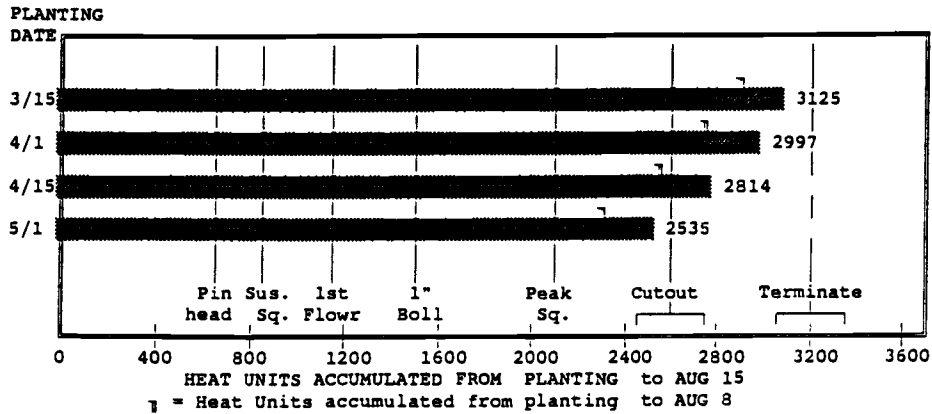
Plant population recommendations: acceptable = 20,000 - 60,000 plants/acre;  
 optimal = 25,000 - 50,000 plants/acre.

To determine plant population, measure out the length of row that equals 1/1000 of an acre and count the number of plants that reside in that length. Then multiply the count by 1000 to get population in plants per acre. The length of row that equals 1/1000 acre for various row spacing: 13'1" for 40" rows, 13'9" for 38" rows, 14'6" for 36" rows and 17'5" for 30" rows.

Figure 1.

Example of a 1992 Planting Date Advisory for Litchfield Park.

PINAL COUNTY AUG 16, 1992  
 COTTON DEVELOPMENT ADVISORY : FULL SEASON COTTON



INSECT INFORMATION

Late season problems require intensive scouting & careful identification, consideration of termination & yield potential, and proper insecticide selection. Whitefly infestations are increasing in some areas and should be controlled to minimize stickiness on open bolls. Cotton aphids are also causing stickiness in central AZ, sometimes alone and sometimes with whiteflies. These aphids are orange to dark green either with or without wings. Aphid infestations can cause cupping of the leaves particularly near the terminals and may not be controlled by the same insecticides as for whiteflies. See UA Extension guidelines "1992 Insect Pest Management for Cotton" for a listing of chemical options. Leaf feeding pests cannot harm a crop except under heavy leaf loss (>25%). Bolls that are 3 weeks old are safe from insect injury.

AUG 16 - AUG 22 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	103	72	186
Last Year :	100	72	184

5-DAY WEATHER FORECAST

Sunny and very hot with lower humidity this week. Temperatures will remain near record levels and average 5-10 F above normal for the week. Widely scattered thunderstorms will be present early in the week, then lessen in coverage with the decrease in humidity. Warm night temperatures are expected again this week. This may result in enhanced fruit loss -- a normal occurrence for this time of year, especially given the high fruit retention levels observed in many areas.

RAINFALL LAST WEEK: Coolidge, Maricopa & Eloy = 0.00".  
 COTTON WATER USE LAST WEEK: ranged from 2.3" (planted 3/15) to 2.1" (planted 5/1).

AGRONOMY UPDATE

Many fields are experiencing rapid decline (senescence). This is often due to crop maturation (commonly with a good boll load), whitefly populations, and in some cases foliar diseases. Cut-out stage can be easily identified by counting the number of mainstem nodes present above the top white bloom (NAWB), within two fruiting positions of the mainstem. When the NAWB count in a field is less than 5, the crop should be rapidly progressing into cut-out. Approximately 600 HU are required for a flower to develop into a 1-inch, hard boll (fiber length complete). Therefore, the last bolls intended for harvest will require 3-4 weeks of adequate soil moisture to attain full development, and irrigations can be terminated accordingly.

Figure 2. Example of a 1992 Cotton Development Advisory for Pinal County.