

The 1996 Arizona Cotton Advisory Program

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Abstract

Arizona Cooperative Extension generates and distributes weather-based Planting Date and Cotton Development Advisories for 14 cotton production areas (Marana, Laveen, Paloma, Litchfield Pk., Pinal Co., Parker, Mohave Valley, Queen Creek, Safford, Yuma Valley, Aguila, Cochise Co., Greenlee Co. and Harquahala). Planting Date Advisories are distributed from mid-February through the end of April and stress 1) planting 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. The Cotton Advisory Program will continue in 1996 and growers may obtain advisories by mail or fax from the local county extension office, and by computer from AZMET or the University of Arizona College of Agriculture World Wide Web Page. Major program changes planned for 1996 include 1) adjusting the Crop Development Advisories to reflect the revised legal first planting dates in low elevation production areas and 2) the addition of an advisory for Harquahala.

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 1996. This document briefly reviews the advisory program, then details plans for the 1995 program.

Advisory Content

The Cotton Advisory Program provides cotton growers weekly updates on crop development, agronomy, pests and weather from mid-February through 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 through 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 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. 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 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. 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, 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. Insect updates track emergence of various PBW generations using HUs and discuss appropriate scouting and control measures for PBW, sweet potato/silverleaf whitefly and other insect pests. The cotton agronomy update provides details on nitrogen and water management, factors impacting fruit retention, 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, rainfall, evapotranspiration), the presence of a local AZMET weather station is a prerequisite for advisory development. Table 1 lists 14 locations served by the program, and the AZMET weather stations serving each location.

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 production or pest problems.

Growers interested in accessing advisories by computer have two options -- the free, public access AZMET Computer Bulletin Board System (BBS) and the World Wide Web Site of the University of Arizona College of Agriculture computer known as AgInfo. Advisories are placed on each computer system on Monday afternoons and remain on the system through Saturday of each week. Details on accessing these two systems are provided later in this publication.

The 1996 Cotton Advisory Program

The major change planned for the 1996 program results from the changes in legal first planting date approved for most low desert production areas. Most low elevation areas will be able to plant 14-16 days earlier in 1996. This will require an adjustment to the representative planting dates listed on the Cotton Development Advisories. A fifth representative planting date will be added to advisories in those areas affected by changes in planting dates. This fifth date will be the newly revised legal first date. Thus, Yuma will now contain the planting date 1 February along with the original four planting dates of 15 February, 1 March, 15 March and 1 April. In a similar vein, Pinal County advisories will now contain a 1 March planting date in addition to the original four dates of 15 March, 1 April, 15 April and 1 May.

The only other major change planned for 1996 will be the addition of Harquahala in the program. The Harquahala advisory will utilize weather data from a new AZMET station that is to be installed in Harquahala in early 1996.

Aside from the changes mentioned above and the availability of advisories from the College of Agriculture World Wide Web Site, the 1996 Cotton Advisory Program will resemble the 1995 program. The weather, insect and agronomy updates will remain in the same order, and their content will change as 1996 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.

How To Obtain The 1996 Cotton Advisories

Growers and other interested individuals may obtain advisories from three sources: 1) local county extension offices, 2) AZMET's computer bulletin board system and 3) the University of Arizona College of Agriculture World Wide Web Site known as AgInfo. 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 is generally recommended since local extension personnel often modify and/or add materials to the base advisories developed by AZMET. These local modification/additions are only available via the 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.

AZMET Computer Bulletin Board

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.

If a user downloads the advisory to their computer then 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 adjust 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 possible 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 work 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 advisory on the 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 14 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.

Access Via College of Agriculture World Wide Web Site: AgInfo

The University of Arizona College of Agriculture now operates a World Wide Web Site known as AgInfo. The Arizona Meteorological Network (AZMET) operates a separate Web Site as part of AgInfo which provides access to the weekly cotton advisories as well as past AZMET weather data. The AZMET Web-Page URL address is:

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

The weekly cotton advisories are available via this web page. To access the advisories, proceed to the bottom of the page containing the map showing AZMET station locations. You will see a section labeled "Special Reports" which allows access to the Cotton Advisories sub-page. Select the advisory of interest from the list of locations provided. Advisories from previous weeks are also available for each location.

You may also retrieve cotton advisories by selecting the location of interest from the 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 the current and past cotton advisories for your location of choice.

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 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 previous section entitled "AZMET Computer Bulletin Board".

Table 1. The 14 locations that will receive advisories during the 1996 Cotton Advisory Program and the AZMET station(s) serving each location. Harquahala will be served by the program for the first time in 1995.

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

*NOAA National Weather Service Data (No AZMET Station)

**Advisory Program will expand to Harquahala in 1996.

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): (602) 621-1197
 AZMET Fax (602) 621-9796
 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*

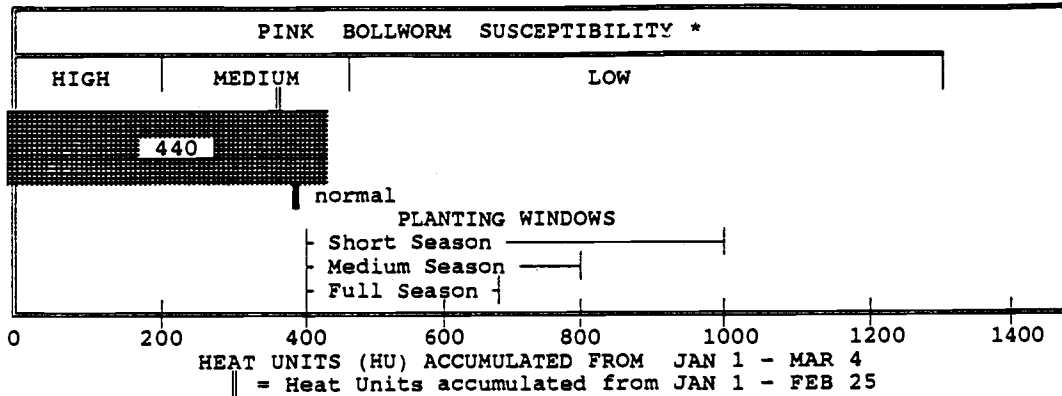
*Available from Agricultural Communications & Computer
 Support for \$5.00. Contact: Publications Distribution Center at (602) 621-1713

Table 3.

AZMET file areas where each of the 1996 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
Cochise Co.	Bonita
Greenlee Co.	Greenlee
Harquahala	Harquahala
Laveen	Laveen
Litchfield Pk.	Litchfield Pk., Waddell
Marana	Marana, Tucson
Mohave Valley	Mohave Valley
Paloma	Paloma, Dateland
Parker Valley	Parker
Pinal Co.	Maricopa, Coolidge, Eloy
Queen Creek	Queen Creek
Safford	Safford
Yuma Valley	Yuma Valley, Mesa, North Gila

YUMA VALLEY MAR 5, 1995
COTTON PLANTING DATE ADVISORY



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

INSECT UPDATE

The planting window is now open.

Growers are advised to plant full season varieties first. The planting window for full season varieties and Pima will close Mar 23 if temperatures remain near normal.

Please note recommended planting forecast provided below.

WEATHER UPDATE

MAR 5 - MAR 11	WEATHER:		WEEKLY
	HIGH	LOW	HEAT UNITS
30 yr Norm.:	77	47	63
Last Year :	75	50	61

HUs are running about 5 days ahead of normal. HUs last week = 67.

FORECAST:

Rain on Monday, then partly cloudy and mild through Thursday. Another major storm system is projected to impact Arizona beginning late Thursday. Growers are encouraged to closely monitor forecasts before initiating planting or other weather sensitive field operations.

Daytime temperatures will average near normal. Night temperatures will continue to average 3 - 5 F above normal due to above normal humidity and cloudiness.

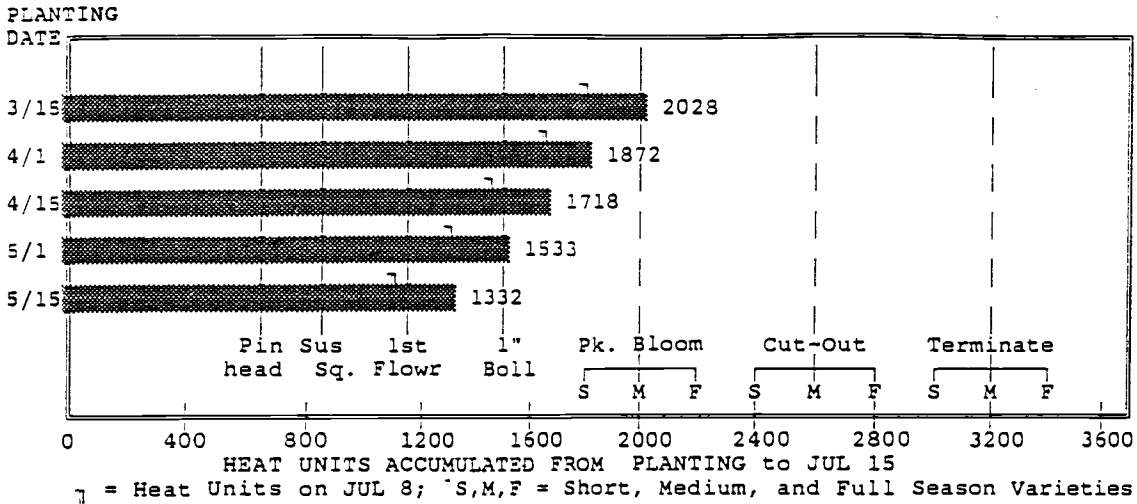
Last Week's 8am Soil Temp: Max = 64.4 FEB 26 ; Min = 62.2 MAR 2

AGRONOMY UPDATE

There are two soil-borne fungal organisms which can cause seedling and root diseases in cotton. These pathogens are *Rhizoctonia solani* (a.k.a. rhizoc, sore-shin, damping off, etc.) and *Thielaviopsis basicola* (black root rot). Both of these organisms are widespread in Arizona soils, but this does not mean that cotton seedlings will automatically become infected. Any cultural practice or environmental condition that delays seed germination or seedling growth increases the probability of seedling diseases. Planting in soil with temperatures of 60 F or more are important in avoiding seedling diseases. High quality, vigorous seed should be used and herbicide applications done carefully. Most seed is treated with fungicides, but additional in-furrow treatments are also available.

Figure 1. Example of a 1995 Planting Date Advisory for Yuma Valley.

PINAL COUNTY COTTON DEVELOPMENT ADVISORY
JUL 16, 1995



INSECT UPDATE

Insecticide Resistance Management (IRM) depends on thoughtful planning & timing of chemical controls. Difficulty in controlling whiteflies is one reason to practice IRM, but Lygus & PBW are ever-present & also exposed to the cotton insecticides that we would like to preserve for future use. The IRM plan for whiteflies includes 1) avoiding the use of pyrethroids before threshold (5 adults/leaf or 5% infested with 3 or more adults), 2) rotating applications among classes of insecticides & among different insecticides within classes, 3) limiting the use of each insecticide to just 2 uses per season, & 4) avoiding the use of important whitefly insecticides when treating other pests. See IPM No. 3 (July 1995) & WFs in AZ: Pocket Guide.

JUL 16 - JUL 22 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	103	73	190
Last Year :	100	73	188

WEATHER UPDATE, STATISTICS & ESTIMATED COTTON WATER USE

Monsoon conditions will continue in most locations this week. Expect moderate temperatures, high humidity, relatively warm nights and a chance for scattered afternoon thunderstorms. Temperatures will average near normal for the week.

The past week's monsoon flow brought widely scattered showers and lowered evaporative demand somewhat. Still, most locations did not report significant rainfall. Growers are encouraged to monitor soil water status closely. Avoid water stress during the primary bloom cycle!

Heat Units (HU) are running about 5 days behind normal. HU last week = 193. Heat Unit accumulation since Jan 1 = 2429; Last year = 2697; 30 year normal = 2564.

Planting date :	3/15	4/1	4/15	5/1	5/1
Water Use (last week):	2.37"	2.11"	1.85"	1.54"	1.2"

AGRONOMY UPDATE

Some fields are showing some tendencies of developing vegetative growth. Fruit retention (FR) levels have dropped in some cases, perhaps in response to higher night temperatures. It is best to catch these trends in early stages by regular monitoring. Plant vigor is easily checked by use of height to node ratios (HNR), referencing AZ baselines. FR levels should also be monitored regularly. For high FR, it is critical to avoid water stress and to maintain good plant nutrition, particularly N. Applications of N fertilizer (approx. 50 lb. N/acre/application) should be completed by peak bloom (about 2000 HUAP). Applications of N should be reduced or eliminated if FR is low and HNRs and petiole nitrates are high. PIX is recommended for cases where HNRs are increasing and FR levels are dropping.

Figure 2. Example of a 1995 Cotton Development Advisory for Pinal County.