

The 1997 Arizona Cotton Advisory Program

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Abstract

Arizona Cooperative Extension generates and distributes weather-based Planting Date and Cotton Development Advisories for 15 cotton production areas (Marana, Laveen, Paloma, Litchfield Pk., Pinal Co., Parker, Mohave Valley, Queen Creek, Safford, Yuma Valley, Aguila, Cochise Co., Greenlee Co., Harquahala and Wellton-Mohawk). Planting Date Advisories are distributed from shortly after legal first planting date until the end of April and stress 1) planting cotton varieties according to heat unit accumulations rather than calendar date and 2) the importance of weather conditions and 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 1997, and growers may obtain advisories by mail/fax from local extension offices or by computer from the AZMET computer bulletin board system or AZMET Internet Web Page (<http://ag.arizona.edu/azmet>). Major program changes planned for 1997 include 1) providing heat stress information on Crop Development Advisories and 2) the addition of an advisory for the Wellton-Mohawk 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 1997. This document briefly reviews the advisory program, then details plans for the 1997 program.

Advisory Content

The Cotton Advisory Program provides cotton growers weekly updates on crop development, agronomy, pests and weather from shortly after legal first planting date until 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 (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, 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 discuss appropriate scouting and control measures for pink bollworm, sweet potato/silverleaf whitefly and other insect pests. The cotton 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 15 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 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 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 free, public access AZMET Computer Bulletin Board System (BBS) or the AZMET Internet Web Page located at <http://ag.arizona.edu/azmet>. 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 1997 Cotton Advisory Program

Changes planned for the 1997 Cotton Advisory Program include the addition of an advisory for the Wellton-Mohawk area and addition of heat stress information in the weather update of the Cotton Development Advisory. The Wellton-Mohawk advisory will utilize weather data from a new AZMET station that is to be installed in the area in February of 1997. A new crop temperature model which uses AZMET's temperature and humidity data will be used to provide assessments of heat stress conditions at low desert locations.

Aside from the changes mentioned above, 1997 Cotton Advisory Program will resemble the 1996 program. The weather, insect and agronomy updates will remain in the same order, and their content will change as 1997 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 1997 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) AZMET Internet Web Page. 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 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 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 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 15 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 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>

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** 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 previous section entitled "AZMET Computer Bulletin Board".

Table 1. Locations covered by the 1997 Cotton Advisory Program and the AZMET weather station(s) serving each location. Wellton-Mohawk will be added to the program for the first time in 1997.

<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
Wellton-Mohawk**	Wellton-Mohawk
Yuma Valley	Yuma Valley

*NOAA National Weather Service Data (No AZMET Station)

**Advisory Program will expand to Wellton-Mohawk in 1997.

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).

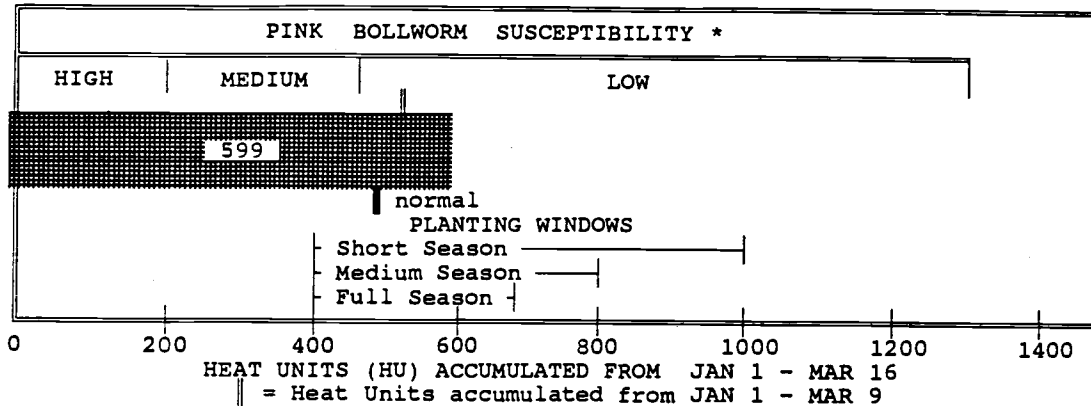
Author: P. Brown*

*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 1997 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
Parker Valley	Parker
Pinal Co.	Maricopa, Coolidge, Eloy
Queen Creek	Queen Creek
Safford	Safford
Wellton-Mohawk	Wellton-Mohawk
Yuma Valley	Yuma Valley, Mesa, North Gila

YUMA VALLEY MAR 17, 1996
COTTON PLANTING DATE ADVISORY



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

INSECT UPDATE

Heat unit accumulation is now in excess of 600 in the Yuma area. Growers are encouraged to complete their plantings of full season varieties as soon as possible. More determinate medium or short season varieties are recommended for subsequent plantings.

Soil temperature/planting recommendations: A favorable 5-day forecast and ...

- Acceptable: 8 a.m. soil temperatures of 60F for 3 days.
- Optimal: 8 a.m. soil temperatures of 65F or above for 3 days.

WEATHER UPDATE

MAR 17 - MAR 23	WEATHER:		WEEKLY
	HIGH	LOW	HEAT UNITS
30 yr Norm.:	80	48	75
Last Year :	86	54	100

HUs are running about 9 days ahead of normal. HUs last week = 66.

FORECAST:

Sunny, breezy and very warm with little chance for rain. Daytime temperatures will run about 10 degrees above normal while nighttime temperatures will run about 5 degrees above normal. NOTE! The current long range forecast shows a storm system approaching the northern sections of the Pacific Coast on Friday and Saturday. Growers planting late in the week should seek an updated forecast to determine if this storm is scheduled to move into Arizona.

A good planting forecast: highs in low 80s; lows of 48 and above; no rain.

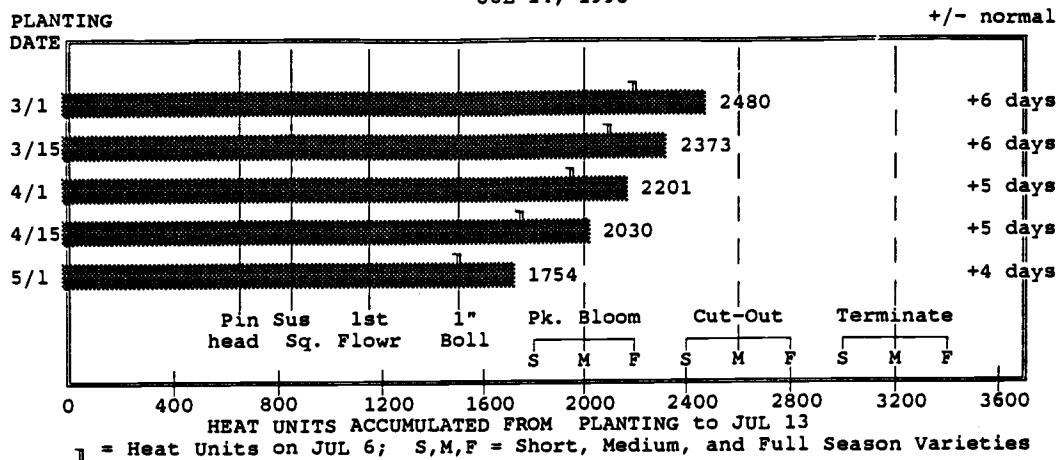
Last Week's 8am Soil Temp: Max = 66.4 MAR 13 ; Min = 59.6 MAR 16
Last Week's Rain = .16 inches

AGRONOMY UPDATE

Seedling germination, emergence and vigor can be affected by a number of factors including: variety vigor, soil temperature, soil salinity, herbicide program (i.e. recent work has shown that dinitroanilines and Zorial use may require an increase in seeding rates), etc.. The more adverse conditions are at planting, the higher the seeding rate one may need to use. For example, if a variety is being planted with 5,000 seeds/lb., the target population is 40,000 plants per acre (ppa); an emergence rate of 50% would require 16 lb. seed/acre. An emergence rate of 25% would require 32 lbs. seed/acre. Field conditions should be evaluated at the time of planting and seeding rates adjusted accordingly. A minimum stand population of 20,000 ppa should also be recognized.

Figure 1. Example of a 1996 Planting Date Advisory for Yuma Valley.

LITCHFIELD COTTON DEVELOPMENT ADVISORY
JUL 14, 1996



INSECT UPDATE

Lygus may be increasing in some areas. Treat when there are 15-20 Lygus / 100 sweeps. Continue sampling WFs this week, but recognize that adults sampled within 24 hrs of a rain may not be reliable. Methods are described in IPM Ser. No. 2 & IPM Ser. No. 6. Count adults AND large nymphs by turning over the 5th mainstem leaf (30 leaves / field). For timing 1st use of IGRs for WFs, fields must have 3-5 adults / leaf (or 37-57% of the leaves infested with > 2 adults) AND 0.5-1 large, visible nymph / disk. Every effort should be made to use the IGRs before other WF insecticides; otherwise, a Stage II compound can be used when there are 5 adults / leaf (57% infested) present. In chronic areas, plan to use both IGRs before any pyrethroid use.

JUL 14 - JUL 20 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	105	77	200
Last Year :	104	77	202

WEATHER UPDATE, STATISTICS & ESTIMATED COTTON WATER USE

Mostly sunny, hot and humid with a good chance for widely scattered afternoon and evening thunderstorms. Thunderstorms will be most numerous in the south-east and central production areas, especially adjacent to high elevation areas. High humidity will keep days uncomfortable and nights quite warm. Temperatures for the week will run about 3 degrees above normal.

The first two weeks of the monsoon have brought higher humidity and increased afternoon cloudiness, but only widely scattered rains. With many fields at or near peak bloom, it is important to closely monitor soil water status. Water stress during peak bloom can greatly reduce fruit retention and yield.

Heat Units (HU) are running about 8 days ahead of normal. HU last week = 209. Heat Unit accumulation since Jan 1 = 2836; Last year = 2471; 30 year normal = 2634.

Planting date :	3/1	3/15	4/1	4/15	4/15
Water Use (last week):	2.64"	2.64"	2.64"	2.59"	2.08"

AGRONOMY UPDATE

With the recent increases in humidity, changes in fruit retention (FR) may take place. It is not uncommon to experience a sharp drop in FR when monsoon conditions develop. Therefore, fields should be monitored regularly to identify any loss in FR. If FR drops, plants can develop vegetative tendencies, which can be interpreted by an increase in the height to node ratios (HNR). If HNRs increase significantly in a short period of time (7-14 days), applications of a PGR (plant growth regulator, i.e. PIXtm) should be considered. When a field is going through an increase in HNR and loss in FR, an application of PIXtm can be most effective. If the HNR is still below the middle baseline on UA guidelines, PIXtm may not be needed yet, but continue to monitor. (JCS 7/12)

Figure 2. Example of a 1996 Cotton Development Advisory for Litchfield Park.