

The 1994 Arizona Cotton Advisory Program

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Abstract

Arizona Cooperative Extension generates and distributes weather-based Planting Date and Cotton Development Advisories for 11 cotton production areas (Marana, Laveen, Paloma, Litchfield Pk., Pinal Co., Parker, Mohave Valley, Queen Creek, Safford, Yuma Valley, and Aguila). 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 1994 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. This program will again be provided for growers and others in the agribusiness community in 1994. This document briefly reviews the advisory program, then details plans for the 1994 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) 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 development, pest management, 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, 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 whitefly and other insect pests. The cotton agronomy update provides details on nitrogen and water management, 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 eleven locations served by the advisory 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 pest problems.

The free, public access AZMET Computer Bulletin Board System (BBS) serves as a second distribution path for the weekly advisories. Advisories are 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 1994 Cotton Advisory Program

Few changes are planned for the 1994 Cotton Advisory Program. The advisories will be developed for the eleven locations listed in Table 1, and the physical appearance of the advisories will remain similar to those produced in 1993. However, the designation that the advisory is for full season cotton will be dropped in favor of just the title Cotton Planting Date Advisory or Cotton Development Advisory. The addition of planting windows for full, medium and short maturity cottons will make the Planting Date Advisory relevant for all growers (Figure 3), and inclusion in the cotton development graph of abbreviations to indicate when short, medium and full season cotton should reach important mid- and late-season development stages (Figure 4) will make the Cotton Development Advisory more useful for producers growing short and medium maturity varieties. The Safford Planting Date Advisory will not show the PBW susceptibility scale and the HU-based planting windows. 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 remain in the same order and their content will change as the 1994 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 1994 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 11 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 eleven locations that will receive advisories during the 1994 Cotton Advisory Program and the AZMET station(s) serving each location.

<u>Location</u>	<u>AZMET Station(s)</u>
Aguila	Aguila
Laveen	Laveen
Litchfield Pk.	Litchfield Pk./Waddell
Marana	Marana/Tucson
Mohave Valley	Mohave
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*

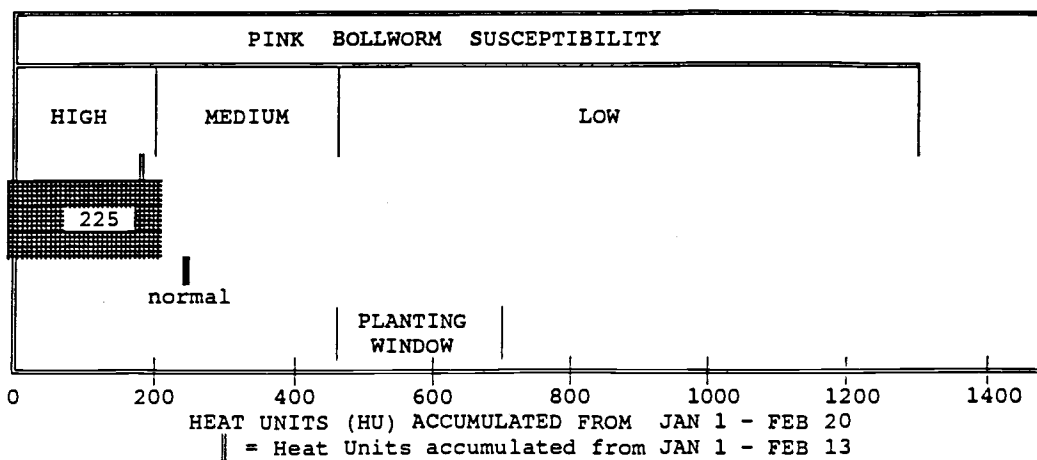
*Available from Agricultural Communications & Computer

Support for \$5.00. Contact: Publications Distribution Center at (602) 621-1713

Table 3. AZMET file areas where each of the 1994 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
Laveen	Laveen
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 UPDATE

The 450-700 HU planting window will open Mar. 20, if temperatures remain near normal.

Spring emergence of PBW should begin about Mar. 25.

WEATHER UPDATE

FEB 21 - FEB 27	WEATHER:		WEEKLY
	HIGH	LOW	HEAT UNITS
30 yr Norm.:	75	41	51
Last Year :	81	52	83

HUs are running about 7 days behind normal. HUs last week = 34

FORECAST:

Sunny and mild Monday. Increasing cloudiness and a chance for showers Tuesday. Rain is likely on Wednesday followed by clearing and cool weather late in the week. Temperatures should average slightly below normal for the week.

A good forecast for planting: highs in the mid 80s and above; lows in the upper 40s and above.

Last Week's 8am Soil Temp: Max = 59.7 FEB 19 ; Min = 55.8 FEB 15

Last Week's Rain = .37 inches

AGRONOMY UPDATE

Recommended soil temperatures for planting:

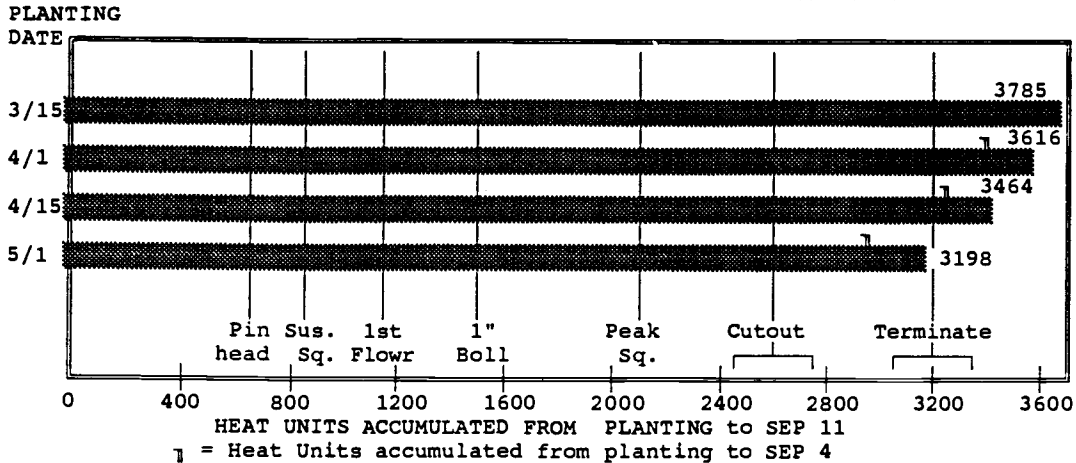
Optimal: 8am soil temperatures of 65 F or higher at seeding depth for 3 days running and a favorable 5-day forecast.

Acceptable: same as above, except soil temperatures of 60 F.

All varieties may be planted within the planting window provided soils are warm and the forecast is good. Growers planning on planting full season or Pima cotton should plant these first, right after window opening.

Figure 1. Example of a 1993 Planting Date Advisory for Yuma Valley. See Figure 3 for example of 1994 Planting Date Advisory graph that will include planting windows for short, medium and full season cotton.

PINAL COUNTY SEP 12, 1993
 COTTON DEVELOPMENT ADVISORY : FULL SEASON COTTON



INSECT UPDATE

Most bolls should be large & impervious to the majority of insect pests. Thus, control decisions depend heavily on potential losses in quality & on threats to efficient chemical defoliation. Defoliator pests (e.g., cotton leafperforator, bollworm/budworm, beet armyworm, saltmarsh caterpillar) can be tolerated (~25% leaf loss) except when efficient chemical defoliation is compromised. Efficient defoliation, quick harvest, and prompt shredding will help in eliminating late season breeding sites for SPWFs and PBWs and reduce their success in overwintering. Separation of fall susceptible SPWF hosts in time or space from the cotton crop may help in reducing the number of SPWF that survive through the fall and winter locally.

SEP 12 - SEP 18 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	100	66	165
Last Year :	99	70	180

WEATHER UPDATE, STATISTICS & ESTIMATED COTTON WATER USE

Mostly sunny and much cooler through mid-week, then sunny and warmer for the weekend. Temperatures will average below normal. Slight chance for rain throughout the period.

Normal values of Heat Unit accumulation for next 2 weeks : 317.
 Heat Units (HU) are running about 1 day behind normal. HU last week = 175.
 Heat Unit accumulation since Jan 1 = 4102; Last year = 4017; 30 year normal =

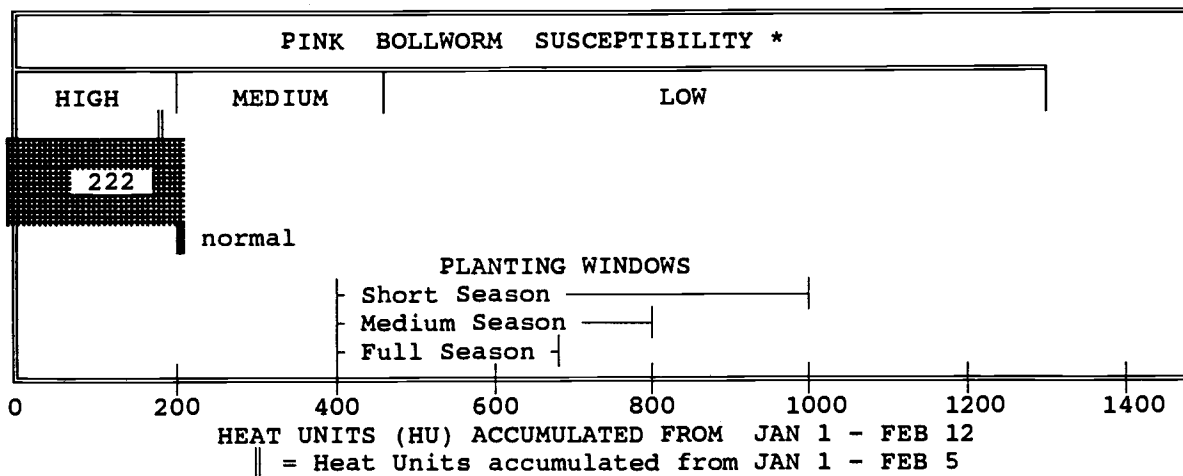
Planting date :	3/15	4/1	4/15	5/1
Water Use (last week):	1.87"	1.96"	2.01"	2.03"

AGRONOMY UPDATE

After the final irrigation has been applied, the general time span required for the timing of the defoliant application can be considered as 2X (twice) the normal interval between the late season irrigations. The NO3-N concentrations in petioles should be 3,000 ppm or less for good defoliation and to avoid late season regrowth problems. Lower rates of defoliant materials can be used under warmer conditions, increasing rates as weather conditions become cooler (refer to labels also). Combinations of many defoliants have usually been more effective and consistent in recent years. Refer to the 1993 UA Cotton Report for recent research results.

Figure 2. Example of a 1993 Cotton Development Advisory for Pinal County. See Figure 4 for example of 1994 Cotton Development Advisory graph that will indicate when short, medium and full season cotton should reach important mid- and late-season development stages.

YUMA VALLEY FEB 13, 1994
COTTON PLANTING DATE ADVISORY



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

Figure 3. New graph for 1994 Planting Date Advisories showing planting windows for full, medium and short maturity cottons.

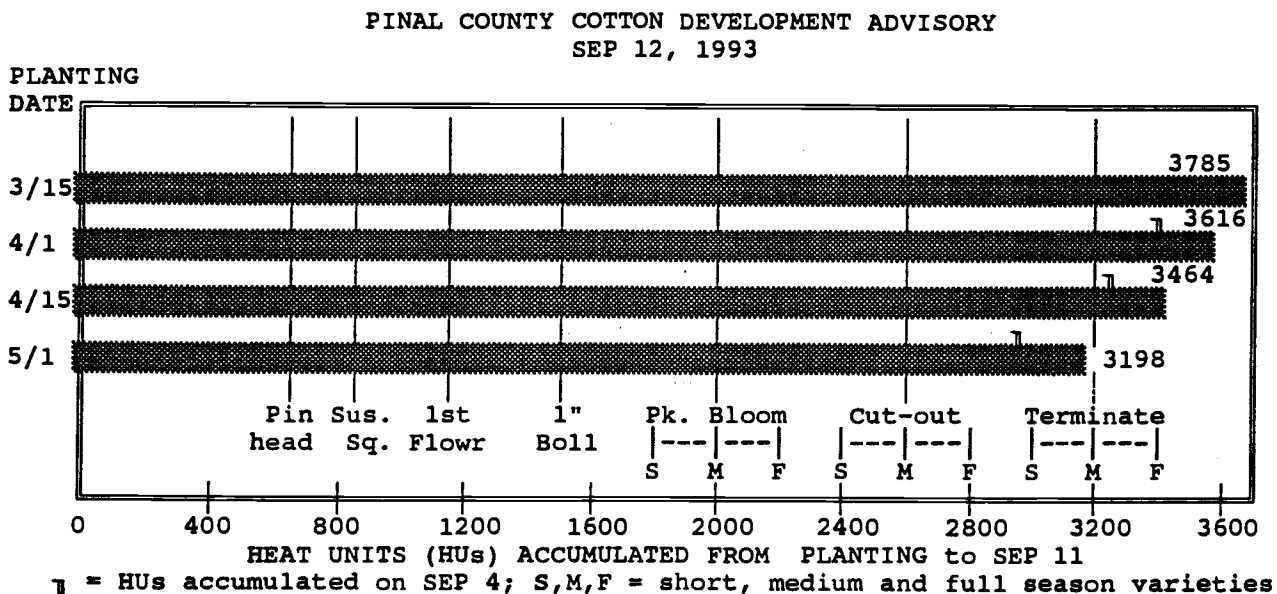


Figure 4. New graph for 1994 Cotton Development advisories. The abbreviations S, M and F were added to the peak bloom, cut-out and terminate portions of the timeline to indicate when growers of short (S), medium (M) and full (F) season varieties should expect to reach those development stages.