

The 1995 Arizona Cotton Advisory Program

*P. Brown, B. Russell, J. Silvertooth, P. Ellsworth, S. Stedman
G. Thacker, S. Husman, R. Cluff, D. Howell, S. Winans and R. Grumbles*

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 or fax from the local county extension office, and by computer from the AZMET computer bulletin board. Improved normal weather statistics and the addition of an advisory for Cochise County are the main changes planned for the 1995 program.

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 1995. 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 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/silverleaf 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 1994 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 1995 Cotton Advisory Program

Two changes are planned for the Cotton Advisory Program in 1995. The first change will be the addition of an advisory for the higher elevation areas of southeast Arizona, particularly Cochise and southern Graham Counties. This twelfth advisory will carry the name Cochise County and will utilize weather data collected by the AZMET station located near Bonita. The Cochise County advisories will closely resemble lower elevation advisories in form and content with the exception that Planting Date Advisories will not contain planting windows nor PBW susceptibility scales (similar to present Safford advisories). PBW is generally not a big problem in this area, and the short growing season precludes using planting date as a means of cultural control for PBW.

A second change planned for 1995 will impact the normal weather statistics presented in the weekly weather updates. In past years, weather statistics associated with the closest long-term NOAA climate station were used in the weather updates. These NOAA normals (30-year averages) often proved to have a significant bias which produced consistent above or below normal conditions when compared with the real-time data generated by the local AZMET station(s). Most AZMET stations have no more than eight years of records and therefore do not yet represent a "true normal" picture of the local climate. However, sufficient data now exists to evaluate the bias between NOAA and AZMET stations and adjust the NOAA normals to make them more representative of the AZMET sites. Such adjusted normals will be used in the 1995 advisories and should eliminate 1) chronic below normal conditions reported in recent years at Parker and Paloma and 2) chronic above normal conditions reported at Safford and Yuma Valley.

Aside from the changes mentioned above, the 1995 Cotton Advisory Program will resemble the 1994 program. The weather, insect and agronomy updates will remain in the same order, and their content will change as 1995 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 1995 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. The new Cochise County advisory will be disseminated directly from AZMET via fax to selected gins and agribusinesses in the local area.

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.

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 12 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 twelve locations that will receive advisories during the 1995 Cotton Advisory Program and the AZMET station(s) serving each location. Cochise County will be served by the program for the first time in 1995.

<u>Location</u>	<u>AZMET Station(s)</u>
Aguila	Aguila
Cochise County*	Bonita
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
Safford	Safford
Yuma Valley	Yuma Valley/Mesa/N. Gila

*Advisory Program will expand to Cochise County in 1995.

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 Fax (602) 621-9742

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

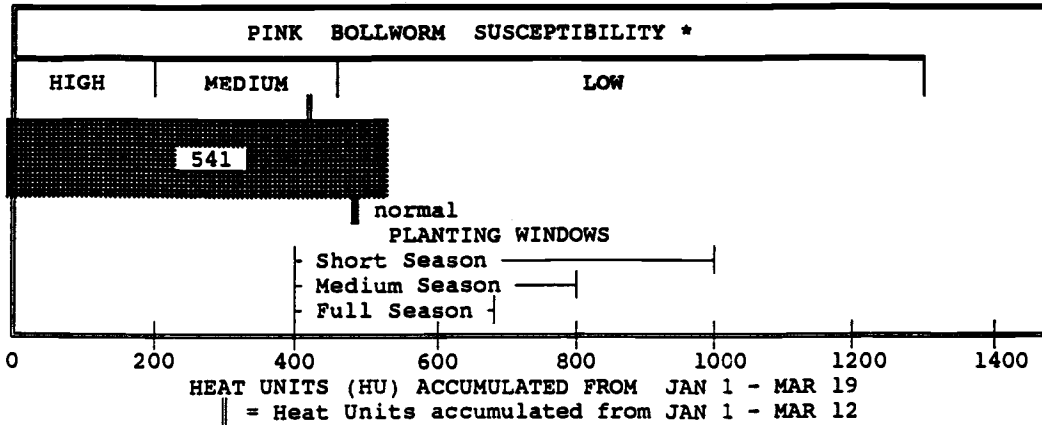
Support for \$5.00. Contact: Publications Distribution Center at (602) 621-1713

Table 3.

AZMET file areas where each of the 1995 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 County	Bonita
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

YUMA VALLEY MAR 20, 1994
COTTON PLANTING DATE ADVISORY



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

INSECT UPDATE

The seasonal cycle of the sweetpotato whitefly is very much dependent on the availability of a plant host sequence throughout the year. A different complement of host plants help SPWFs survive in each area. Cantaloupes & other melons are good hosts for SPWF, and in areas where grown, they are indicators of early season population build-up. UA staff are monitoring populations on cantaloupes in Yuma, Maricopa and Pinal Co. to validate a new sampling scheme (see IPM Ser. Bul. No.1). While these data give a general indication of SPWF populations, they cannot be used for control decisions. Populations were counted only in Yuma this week and averaged 0.21 - 0.77 adults/leaf (4 fields; 200 leaves/field). PBW moth emergence has begun and can be monitored now by deploying pheromone traps.

WEATHER UPDATE

MAR 20 - MAR 26	WEATHER:		WEEKLY
	HIGH	LOW	HEAT UNITS
30 yr Norm.:	81	47	75
Last Year :	81	54	86

HUs are running about 5 days ahead of normal. HUs last week = 94.

FORECAST:
 Sunny and mild through Tuesday, followed by cooler and unsettled weather late in the week. The Friday projection for the jet stream placement suggests rainy & unsettled weather late in the week. Growers should obtain an updated forecast before planting this week. Temperatures should average near normal for the week.
REMINDER: A Good Planting Forecast: Highs 83 F and above, Lows 48 F and above.

The annual HU total will exceed 600 HUs early next week. Growers are encouraged to complete their plantings of full season Upland and Pima cotton as soon as possible.

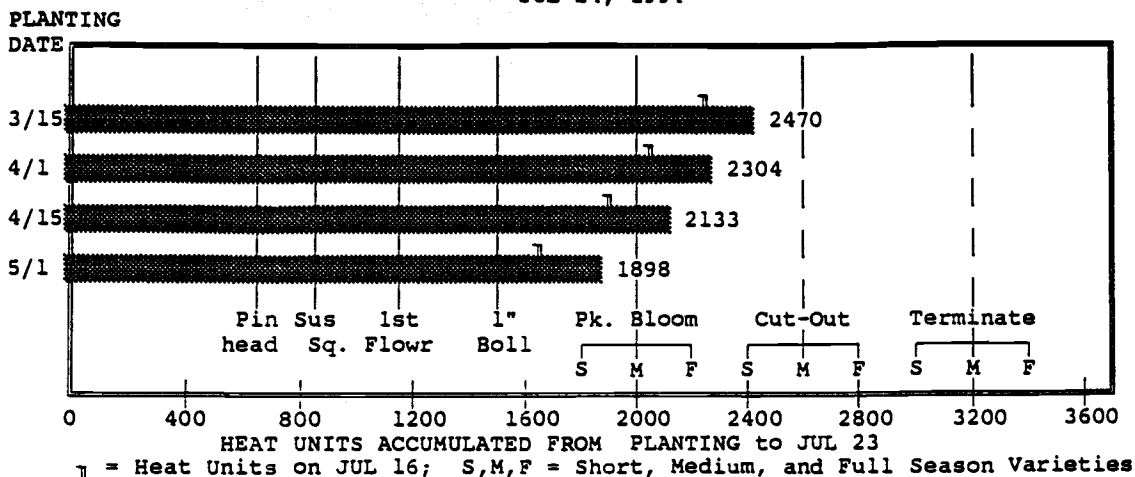
Last Week's 8am Soil Temp: Max = 63.2 MAR 18 ; Min = 58.3 MAR 13
 Last Week's Rain = .05 inches

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.
 Refer to recommended planting windows in the figure at the top of the page.
 Full season Upland varieties and Pima should be planted first. All varieties may be planted early, provided soils are warm and the forecast is good.
 When calibrating planters, be sure to refer to seed counts per pound of seed to take into account the broad ranges in seed sizes which occur with common varieties being used.

Figure 1. Example of a 1994 Planting Date Advisory for Yuma Valley.

PINAL COUNTY COTTON DEVELOPMENT ADVISORY
JUL 24, 1994



INSECT UPDATE

Sweetpotato whitefly populations are rapidly changing and should be checked using a leaf turn method. Look for adults on the 5th mainstem leaf from the terminal. Cotton should be treated when adult levels reach 5-10 per leaf, or when 57-82% of a 30-leaf sample bear 3 or more SPWFs. See IPM Ser. No. 2, "Sampling Sweetpotato Whiteflies in Cotton" for more information. Re-check populations after treatment to ensure field coverage and compound performance. As melons are harvested, SPWFs may move to adjacent crops in large numbers. Destroy crop residue immediately after harvest. Beet armyworms feed primarily on foliage where economic damage is rare; however, larger larvae may damage young squares and small bolls. Examine bolls for the presence of PBW larvae; also, look for signs of damage from Lygus.

JUL 24 - JUL 30 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	106	75	196
Last Year :	108	68	177

WEATHER UPDATE, STATISTICS & ESTIMATED COTTON WATER USE

Sunny, hot and humid with a chance for afternoon thunderstorms. Temperatures will remain above normal for this week.

Heat Units (HU) are running about 2 days ahead of normal. HU last week = 183. Heat Unit accumulation since Jan 1 = 2863; Last year = 2770; 30 year normal = 2797.

Planting date :	3/15	4/1	4/15	5/1
Water Use (last week):	1.84"	1.74"	1.61"	1.41"

AGRONOMY UPDATE

Counting the number of nodes above the top bloom (NAWB) provides an easy estimate of stage of growth. When NAWB counts drop to 5 or less the crop is progressing rapidly into cut-out. Decisions concerning crop termination should be made as fields move into cut-out. Medium and short season varieties do not have much top-crop potential and should be terminated in a manner that provides for full development of bolls set up to cut-out. An additional 600 HU are needed to develop a bloom into a full sized, hard, green boll (fiber length development complete). Irrigations should be continued so that adequate soil moisture is maintained throughout the full 600 HU period for the last bolls intended for harvest.

Figure 2. Example of a 1994 Cotton Development Advisory for Pinal County.