

The Arizona Cotton Advisory Program

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Abstract

Arizona Cooperative Extension produced and distributed weather-based Planting Date and Cotton Development Advisories for 8 cotton production areas (Marana, Litchfield Pk., Pinal Co., Parker, Safford, Yuma Valley, Dateland and Aguila) in 1991. Planting Date Advisories were distributed from mid-February through the end of April and stressed 1) planting full season cotton varieties according to heat unit accumulations rather than calendar date and 2) the importance of soil temperature to good germination. Cotton Development Advisories were distributed from early May through mid-September and provided growers updates on crop development, insects, weather and agronomy. The Cotton Advisory Program will continue in 1992 with the major change being an expansion in coverage to include Paloma, Queen Ck., and Mohave Valley.

Introduction

Arizona Cooperative Extension published weekly weather-based advisories for Arizona cotton producers during the 1991 growing season. Favorable response from growers and others in the agribusiness community have provided the impetus to continue the advisory program in 1992. This document briefly reviews the 1991 advisory program, then details plans for the 1992 program, including how growers may obtain the advisory.

The 1991 Cotton Advisory Program

Advisory Content

The 1991 Cotton Advisory Program was initiated in February of 1991 to provide cotton growers weekly updates on crop development, agronomy, pests and weather. Two related but distinct advisories were used during the season-long program: the Planting Date Advisory and the Cotton Development Advisory. The Planting Date Advisory was generated each Monday from mid-February until late April or early May (depending on location) and emphasized planting full season varieties 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 was used to illustrate the proper planting time for full season varieties (Figure 1).

The remainder of the Planting Date Advisory was 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 was stressed in the weekly agronomy updates.

Cotton Development Advisories were issued beginning in late April or early May and provided 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 4 representative planting dates was located at the top

of the advisory. HU-based development timelines were 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 remained similar to that of the Planting Date Advisory and provided updates on weather (both normal and forecasts), insects and cotton agronomy. Estimates of cotton water use were added to the weather section to assist growers with irrigation management. The insect updates tracked the emergence of various PBW generations using HUs and discussed appropriate scouting and control measures for PBW and other insect pests. The cotton agronomy update provided 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) served as the site for advisory development. Because the advisories made heavy use of near-real time weather information (e.g. HUs, rainfall, evapotranspiration), the presence of a local AZMET weather station was deemed a prerequisite for advisory development. The eight cotton growing regions selected to receive advisories in 1991 and the AZMET weather stations serving each region are listed in Table 1.

Development of the advisories proceeded each Monday morning in the following manner. First, AZMET personnel summarized the previous week's data and made the necessary computations of weather-based variables. Second, Extension Specialists in entomology and cotton agronomy submitted their respective weekly updates to the AZMET DPC for inclusion in the advisories. AZMET personnel then developed, proofed and printed the advisories for each region. The advisories were then sent via facsimile machine to each county extension office on Monday afternoon where local modifications were made prior to distribution to growers. The level of local modification varied with county but generally consisted of brief discussions of local pest problems.

The free, public access AZMET Computer Bulletin Board System (BBS) served as a second distribution path for the weekly advisories. Advisories were placed in the appropriate BBS file areas on Monday afternoons and remained on the system through Saturday of each week. The BBS provided 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 1992 Cotton Advisory Program

The Cotton Advisory Program will expand to cover 10 locations in 1992 (Table 2). Three new locations -- Mohave Valley, Paloma and Queen Creek -- will be added. Dateland will be removed from the program due to the small acreage of cotton in the area and the addition of the Paloma advisory.

The physical appearance of the advisories will remain similar to those produced in 1991. The graphs at the top of the advisories will remain unchanged except for the addition of arrows to indicate the level of HU accumulation observed on the previous week's advisory (Figure 3) and some adjustments in the recommended planting window for full season varieties. The arrows will help readers assess the rate of HU accumulation at any time in the season; the planting window adjustment is the result of recent research results (Brown et al.). Another change pertains only to the Safford Planting Date Advisory and involves the elimination of the graph depicting seasonal HU accumulation and the HU-based planting window. The short season in Safford does not afford growers the option of adjusting planting dates to avoid PBW spring emergence and the graph is therefore of limited value there.

The weather, insect and agronomy updates will remain essentially the same. A slight change will occur in the weather section where HU accumulation during the past week (in numerical form) will be added as a regular feature. The insect and agronomy sections will remain in the same order and their content will change as the 1992 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 on a local pest outbreak.

How To Obtain The 1992 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 3 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 4). 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 2. 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 4). For example, the Pinal County advisories will be placed in the Maricopa, Coolidge and Eloy file areas.

References

Brown, P., J. Silvertooth, L. Moore and T. Watson. 1992. Revised planting window for full season cotton. In J. Silvertooth (ed). Cotton: A College of Agriculture Report (This issue). College of Agric., Univ. of Arizona, Tucson, AZ.

Table 1. Eight locations receiving advisories during the 1991 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
Parker Valley	Parker (Poston)
Pinal County	Maricopa/Coolidge/Eloy
Safford	Safford
Yuma Valley	Yuma Valley/Mesa/N. Gila

Table 2. Ten locations selected to receive weekly advisories during the 1992 Cotton Advisory Program.

Aguila	Parker Valley
Litchfield Pk.	Pinal County
Marana	Mohave Valley
Mohave Valley	Queen Creek
Paloma	Yuma Valley

Table 3. 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: 300-1200 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.

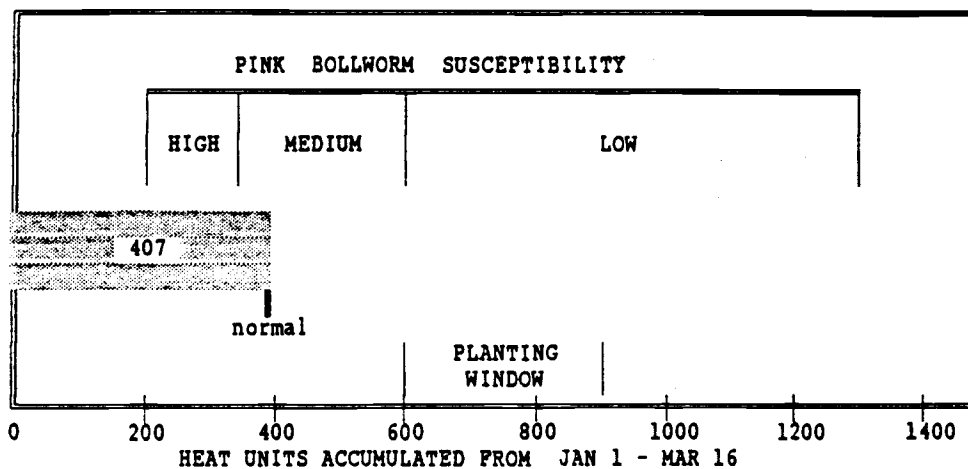
Table 4. AZMET file areas where each of the 1992 cotton advisories may be found. Note! the advisory will be stored under the filename COTTON.RPT in all AZMET File Areas.

<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

LITCHFIELD

MAR 17, 1991

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 FORCAST

Heat unit accumulation is running about 1 days ahead of normal.

Spring emergence of pink bollworm should begin about March 26.

600-900 heat unit planting window is projected to open around April 4, if temperatures remain near normal.

MAR 17 - MAR 23 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	79	45	68
Last Year :	87	47	94

5-DAY NATIONAL FORECAST

Warm Monday, turning much colder with rain Tuesday. Continued unsettled Wednesday through Friday with below normal temperatures and a chance for showers.

AGRONOMY UPDATE

Planting Recommendations :

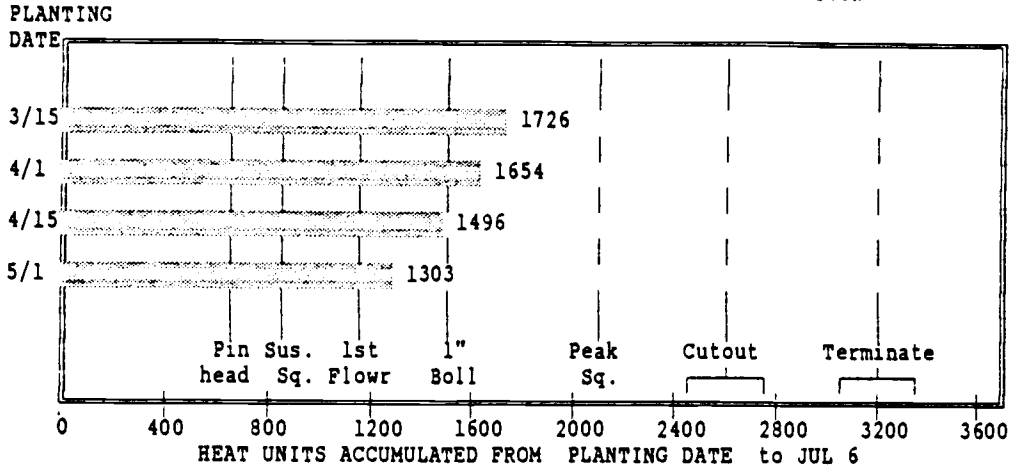
Optimal: Soil temperatures of 65F or higher at 8am at depth of seed placement for 3 days running and a favorable 5-day forecast.

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

8 a.m. soil temperatures last week ranged from 44F (Sat) to 55F (Sun, Mon).

Figure 1. Example of a 1991 Planting Date Advisory for Litchfield Park.

COTTON DEVELOPMENT ADVISORY : FULL SEASON COTTON



INSECT INFORMATION

Early cotton should now have some bolls. Growers should initiate a regular boll sampling program to monitor pink bollworm (PBW) infestation levels. We recommend that infestation levels not be allowed to exceed 10%.

The 2nd generation of PBW should begin appearing this week.

Fields that received pinhead square treatments should be watched for the presence of beet armyworm.

JUL 7 - JUL 13 WEATHER

	HIGH	LOW	WEEK HEAT UNITS
30 yr Norm.:	108	74	195
Last Year :	100	74	190

5-DAY WEATHER FORECAST

Near normal temperatures with moderate humidity levels. Chance of afternoon thunderstorms throughout the period.

**** Heat unit accumulation since Jan. 1 = 2075 (8 days behind normal). Heat unit accumulation since start of growing season (3/15) = 1726 (8 days behind normal).

MONSOON WATCH: Average dewpoint (Td) last week = 48 F. Monsoon definition: Td = 55 F.

>>>> Estimated cotton water use last week: 3/15 planting = 1.67"; 4/1 planting = 1.57"; 4/15 planting = 1.40"; 5/1 planting = 1.14".

AGRONOMY UPDATE

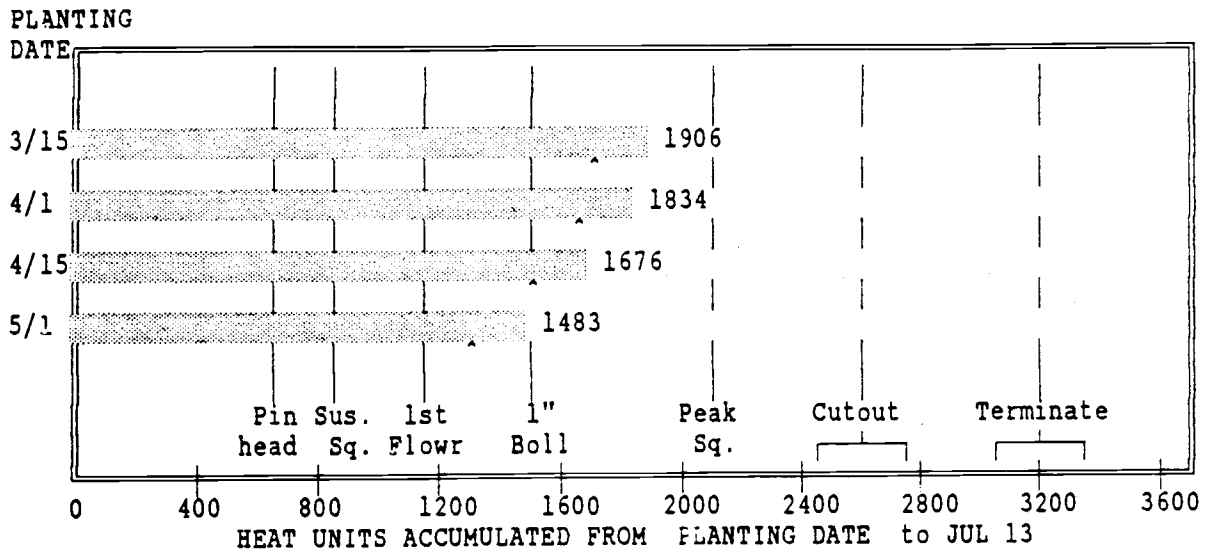
Considerable fruit (square) loss has been observed from the early set positions, however, in most cases vigorous fruit initiation continues. To improve fruit retention and capitalize on the developing potential, it is very important to maintain adequate plant-water relations (minimal stress). Fields should be monitored for average first fruiting branch level (node number), fruit retention levels (plant mapping) and N fertility status (petiole samples and analysis). This information can be used to assist the decision making process concerning crop fertilization and management. Height (inches) to node ratios of 1.5 or greater indicate vegetative tendencies. Appropriate fruit retention levels change with stage of development (heat units) -- consult UA guidelines for more information.

Figure 2. Example of a 1991 Cotton Development Advisory for Pinal County.

PINAL COUNTY

JUL 14, 1992

COTTON DEVELOPMENT ADVISORY : FULL SEASON COTTON



^ Location Of Heat Unit Bar One Week Ago

Figure 3. Prototype of the 1992 Cotton Development Advisory graph. The level of HU accumulation observed on the previous week's advisory will be designated with an arrowhead (Λ).