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In This Issue

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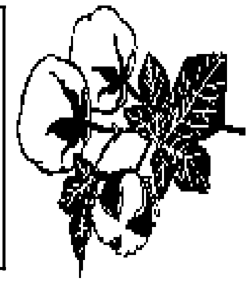

2001 GROWING SEASON—MOVING ALONG FROM A ROUGH START

Bob Hutmacher

The 2001 growing season in California's San Joaquin Valley this spring has been one of those where …. If you didn't like the weather this week, just wait until next week! The problem has been that "next week" in many cases was worse. After fairly favorable air temperatures in early March helped warm the soil, many cotton growers went ahead with planting during the early periods in which we had favorable forecasts for 5-day heat unit accumulations (Figure 1).

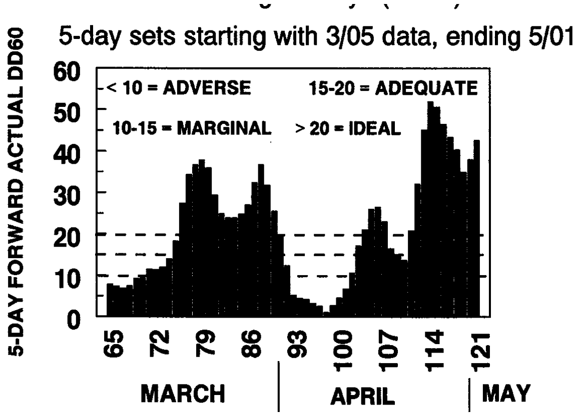

Figure 1. Five Day actual heat unit accumulations as a function of day of year based upon weather station data from the UC Shafter Research and Extension Center during March 5 to May 1, 2001.

After a good start and some favorable progress in getting germination and emergence in early plantings, however, air temperatures and heat unit accumulations declined rapidly at the end of March, with much cooler temperatures accompanied by sporadic rainfall during the first 12-15 days of April (Figure 2). Temperatures in most cases were not routinely severe enough to cause much direct chilling injury, as most growers stopped plantings

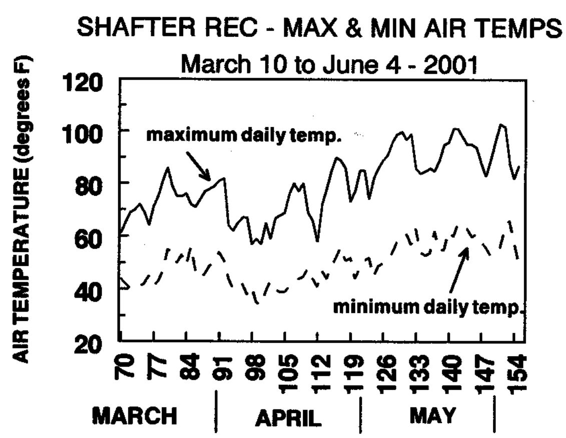

Figure 2. Daily maximum and minimum air temperatures from the weather stations at the UC Shafter REC for March through early June, 2001.

well in advance of the cool-down. Figure 2 doesn't tell the whole temperature story, though, since it is Shafter data, and southern SJV conditions often were milder than in some other parts of the SJV. For example, there were instances of what was likely severe chilling injury and direct stand losses from night-time temperatures below freezing in parts of Madera, Merced and far-western Kings County during early April. Across all parts of the valley, the cloudy, cool weather conditions in early– to mid-April, combined with damp soil contributed to

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widespread problems with various seedling diseases in the March-planted crop. Depending upon the location in the SJV and crop rotation history of the fields, numerous types of seedling diseases (*Pythium*, *Phytophthora*, *Rhizoctonia* and *Thielaviopsis*) all caused weakened plants and significant stand loss in many fields. Seedling disease incidence in the mid– to late-April plantings was much lower than in the early plantings. In addition to the lower seedling disease incidence in the later plantings this year, plants in most fields evaluated by UCCE staff this spring had much less thrips injury than in the past 2-3 years, with less leaf and terminal damage and the developmentl delays that can cause.

Weak growth and poor stands in many of the March-planted fields left growers with some difficult choices. Questions included: (1) will yields of replant fields be worth the extra costs and hassle of replanting fields?; (2) was it becoming too late to replant Pima and if so, was it economic to go with later plantings of Acala or CA Uplands?; (3) where seedlings from early plantings survived in reasonable numbers, were they going to be weak and more difficult to manage to a productive yield? Grower and consultant answers to these questions were varied, but a large of replanting was done in both Pima and Upland fields.

With the coming of hot weather near the start of May, growing conditions changed dramatically. After the cool April of 2001 (which yielded heat unit accumulations similar to those of April, 1998 (Fig. 3)), record and near-record high temperatures through much of May (Fig. 2) pushed heat unit accumulations through early June to levels even higher than in the more favorable, steady weather experienced in 2000 (Fig. 3).

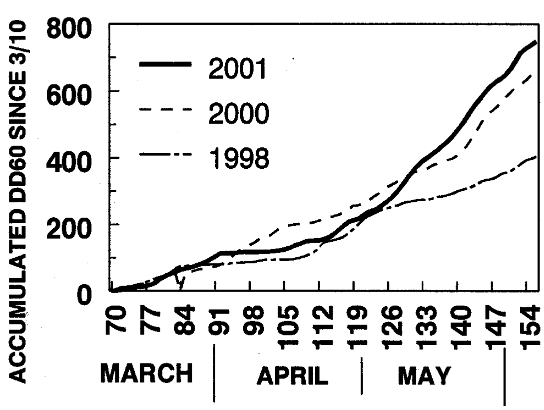

Figure 3. Accumulated heat units (expressed as degree-days, base 60 F) at Shafter, Kern County, CA from March 10 through June 4 in 1998, 2000 and 2001.

Impacts on Some Management Decisions

What we have been left with in many areas in this year of strange weather conditions are many fields of early-planted cotton, a gap during early– to mid-April with few successful plantings, and late-April and early May plantings of both Pima and Upland cotton. Although it is not reasonable to say that all plants fit this pattern, there is significant acreage of:

- Early plantings which got off to a difficult start, sustained root damage and weakened shoot growth due to seedling disease, unfavorable temperatures, sandblasting and drying soil
- Later plantings which often have more uniform plant populations (provided soil moisture was adequate for germination), often with stronger and deeper root systems and better early shoot and leaf growth

Weak Early Plantings. After observing many of the problems in early-planted fields, some UCCE staff agreed with many consultants that earlier irrigations were called for since tap roots were damaged and secondary root developed was endangered by the hot weather and drying conditions in May.

Weak root system development, with its potential impacts on water and nutrient uptake, will remain one of the defining problems throughout the season. Field observation of root system development, lighter but more frequent irrigations, and tailoring input costs for likely lower yield potentials should be considered. Monitoring plants for signs of low vigor and early cutout, and avoidance of stress and high growth regulator rates where low vigor prevails will also be management approaches to consider in these fields.

Later-Planted Fields. It is important not to generalize on what is likely with these fields, as there are the usual wide range of field conditions across the SJV, including some which could have very good yield potentials. With the hot May weather, many fields planted in late April and even early May, even Pima fields, are progressing well and are not more than a week or so behind expected "normal" crop development for early June.

Some cautions might be warranted, however. After the difficult conditions of earlier plantings, many growers went with relatively high seeding rates. The warm temperatures experienced in late April and through May often resulted in most of those seedings emerging. Resulting high populations, if kept and not thinned, could require some more special care, including a likelihood of delayed bloom and more need for growth regulators.

Later-planted fields also tend to have faster vegetative growth rates due to higher prevailing temperatures during early growth, and early fruit retention and plant vigor need to be monitored to avoid problems with excessive vegetative growth. Again, it will be important to assess plant vigor and only make growth regulator applications according to plant monitoring data.

The current status of UCCE insect management recommendations are reviewed in the article which follows. With low commodity prices, and increasing costs for many inputs, timely evaluations of developing pest problems and plant monitoring for vigor and fruit retention remain keys in getting acceptable yields with a better chance for a profit.

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INSECT MANAGEMENT RECOMMENDATIONS FOR 2001

Peter B. Goodell

The 2001 season will be challenging to cotton producers and crop consultants. High production costs and low commodity prices will force growers to squeeze benefit out of every dollar spent. Mother Nature did not cooperate by sending weather that caused late planting or delayed development. Insect pressure is an annual variable in SJV cotton production and insecticide costs can soak up a substantial portion of a production budget in some years. It is important to make insect control decisions based on real threats to yield that justify expenditures from the limited available budget.

What are some strategies that can be considered in insect management in a year of tight budgets, lowered yield expectations in some but not all cases, and continued low commodity prices?

Lygus:

As in most other years, lygus will again likely be the pivotal insect in SJV cotton production. Our first hurtle is avoiding damage during the earliest portion of the fruiting cycle. In a year when planting and development are delayed, everyone will be anxious to set the earliest to avoid further delay in crop maturity caused by requiring the plant to replace lost fruit. However, be realistic about the setting all fruiting positions and review the fruiting charts in the production and pest management manuals.
Treat when fruit retention is below the expected level for that stage of development.

Lygus are not expected to cause major problems during the early portion of the fruiting cycle based upon early observations this year. Weather and host conditions were generally not favorable in the foothills and coastal hills. Rainfall patterns were split between late fall and late winter. Based on surveys by Lygus Spotters (UCCE staff and cooperating consultants) during April and May, host plants were unevenly distributed around the edge of the San Joaquin Valley. Extensive, but scattered, patches of tarweed were present from Maricopa Highway through Blackwell's Corner to Three Rocks in Fresno County. North of Manning Ave, very little host vegetation was available for lygus development.

Since rainfall came in a "split-shift" this year, lygus population development was not favored. Even though large areas of host plants were available, few lygus were collected in April or May. More importantly, tarweed, the most common host for lygus in these areas, quickly dried in the May heat and become unavailable before lygus could complete its life cycle.

The mid-season cotton fruit can still be threatened from localized lygus that originate within the Valley. Growers and PCAs are urged to consider the cropping mosaic in which their cotton is embedded. Begin formulating a strategy for dealing with movement from adjacent crops. Be sure you understand where the threat might develop and what (if any) tactics you might employ to mitigate large movements of lygus. Lygus densities during late June and July should exceed 7 bugs/50 sweeps with at least one nymph present in the sample before treatments are considered.

Spider Mites:

Thus far spider mite populations have not been excessive or widespread. The decision to treat mites usually is a result of a balance between:

- the current population of the mites
- the ability to manage timely applications around production schedules
- the perceived risk of lygus, aphids or worms and subsequent insecticide applications that could allow scattered pockets of mites to develop into yield threatening populations

These spider mite treatment decisions are highly personal and difficult to make but they result in spending down the budget. Examine carefully the anticipated, future benefit with the real threat to yield.

Aphids:
Cotton aphids have been less of a problem in recent years and hopefully that trend will continue. Aphid population development during the mid-season has been linked to:

- planting date - early April dates usually develop fewer aphids than those in late-April or May
- high nitrogen fertilizer use
- use of pyrethroids

PCAs and growers need to be very alert to aphid populations and manage the crop to avoid favoring aphid. Already we have a late-planted crop, but this does not condemn us to mid-season aphid. Good agronomic management, early detection, and use of more selective insecticides, such as imidocloprid, are keys to managing this mid-season pest.

Other Insects:
Whitefly: Silverleaf whitefly should never be taken for granted. We have not seen large populations in recent years, but given proper conditions, they could reappear. Conditions favorable to silverleaf whitefly include:

- population development during the previous fall
- mild winter temperatures
- higher temperatures in spring and summer to reduce the days required to develop a generation
- favorable hosts to build populations

Cotton fields need to be watched carefully. Early intervention is a primary key to management.

Bollworm: Cotton bollworm has not been a pest in SJV since the late 1960's. Populations requiring treatment have appeared over the past several years in Kern County. This late June through August pest requires close plant inspection to locate fresh eggs and newly hatched worms. PCAs are urged to review sampling and evaluation procedures found in the Cotton IPM Manual.

Beet armyworm and cabbage loopers: These foliage feeding pests can be a problem in any year. Loopers have already been a problem in 2001 with some fields being treated. Reduced-risk, selective insecticides are available to manage worms if required including Confirm®, Success®, B.t. products (Dipel®, Xentari®, Lepinox®, etc). Such products may reduce the risk of secondary outbreaks of mites or aphids in contrast to broad-spectrum insecticides.

Summary:
While we cannot control the weather or the insect pressure, we do control the decisions we make regarding insect management. The 2001 season will demand that treatments be justified only when they can demonstrate a net return. PCAs and growers must focus on the optimizing their production costs not seeking maximum yield. In order to accomplish this goal, the growth and development of the cotton crop must be closely followed and decisions must be based on realistic yield expectations for that field and this season.

2001 Insecticide/Miticide Resistance Guidelines

The 2001 Insecticide / Miticide Resistance Management Guidelines will be released soon. The Guidelines were submitted as a University of California Agricultural and Natural Resources publication. It will be available as an electronic leaflet at UC ANR's web site (http://anrcatalog.ucdavis.edu/specials.html).

Printed copies will be made available at the summer production meetings and through Cooperative Extension county offices. The expected publication date is late June and hopefully in time for the June production meetings. Questions concerning availability can be addressed to Pete Goodell (e-mail: ipmpbg@uckac.edu).

WATER MANAGEMENT CONSIDERATIONS IN A "TIGHT" WATER YEAR

Dan Munk and Bob Hutmacher

Long and short-term trends toward lower water availability for agricultural sector use have direct implications for the viability of 21st century agriculture in California. The reduced availability of surface water in the 2001 year has led to increased prices on open water markets and reduced the ability of grower and irrigation districts to secure water for the intended crop. Under conditions with restricted irrigation district allocations and reduced availability of local alternative water supplies, economics will increasingly favor highly efficient irrigation systems with lower average power requirements.

Farming systems least impacted by the downturn in water availability and increased energy costs will be those that already have high distribution uniformity (DU) of application and high season-wide irrigation efficiency (IE). In many instances, irrigation performance is also closely related to soil hydraulic characteristics. In making choices as to available options for changes in irrigation systems and management, soil type often plays a dominant role. Soil infiltration characteristics depend largely upon soil mineral and soil structural composition, and the variability of soil type within a field often changes water infiltration patterns. These basic characteristics can be difficult to markedly change through modification of management practices.

Soils that tend to seal up during an irrigation event often have the highest uniformity in distribution of water and efficiency in actually getting that water infiltrated for crop use. In contrast, those soils with much higher infiltration rates tend to produce large deep percolation volumes that move soil water and nutrients below the root zone. Fields having low uniformity of application and low efficiency will especially benefit from water management methods that increase the proportion of applied water that goes to crop use.

Irrigation efficiency (defined for the purposes of this discussion as percent of applied water stored in the effective root zone for crop use) can be grouped by the water year (as many irrigation districts report) or they can be evaluated independently from event to event.

The more detailed and specific the evaluations, the greater the opportunity to recognize system and management weaknesses and give proper consideration to options for improvements. For example, it is not uncommon for many irrigated cotton fields to have relatively low surface application efficiencies on the pre-plant irrigation, followed by improvements on the first seasonal irrigation event. There is considerable value then to evaluate these two irrigation events separately.

Soil Intake Rate - Pre-Irrigation versus Later Irrigations. In the case of pre-irrigation, tillage and low initial soil moisture, conditions conspire to create an open soil structure with a high percentage of large soil voids and fractures. This open structure facilitates high infiltration rates, which allow more water into the soil than can be stored over the long term, Figure 1. The result is a deep saturated soil zone that produces large drainage volumes causing low application efficiencies for this single irrigation event.

The conditions that foster a low efficiency for the first seasonal irrigation event are somewhat different. Although infiltration rates remain comparatively high during the first seasonal irrigation, they are not as high as they were following the more intensive cultivation practices that likely occurred in the fall or winter months. When compared to a pre-irrigation event done in the fall or early winter, residual soil moisture profile levels in late May and June irrigations are relatively high, and many large soil voids were filled during the earlier irrigation and rainfall.

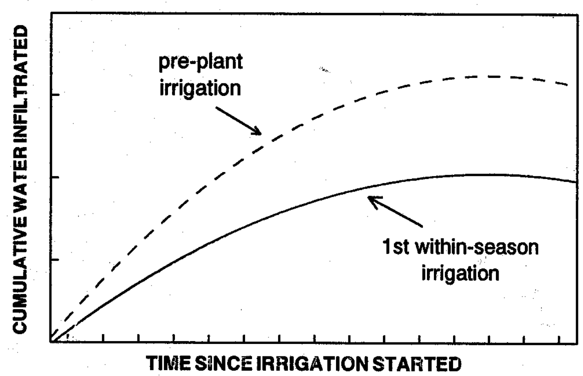

Figure 1. Schematic of relative differences in water infiltration in early season versus pre-season irrigations where tillage and bed preparation occurred prior to pre-plant irrigations.

The cotton plants limited root system continues to remove surface soil moisture at an increasing rate as the plant canopy expands and the atmospheric evaporative demand increases. During this time, the root system has generally exploited soil moisture reserves from the top 12 to 18 inches but remains at or near field capacity below this zone allowing it to be exploited later in the season. The goal of the first seasonal irrigation is to provide adequate water to refill water supplies in the exploited soil zone in order to reduce plant stress and allow the plant to continue its root growth and explore a larger soil volume.

Early Season Evapotranspiration (ET)

Early water loss in cotton fields, though important for the developing seedling, occurs at a very slow rate during the first 35 to 45 days of growth. Much of the early water loss can be evaporation from the soil in addition to small amounts of plant water use (transpiration), so the loss rate can be greatly influence by soil texture and structure. Early season evaporation impacts on soil water content are largely confined to the top three inches of soil. Following cultivation or other surface disturbances, moistened soil brought to the surface quickly loses water and an increase in evaporation rate can occur for a couple of days as described in figure 2.

During the period that follows cotton planting, the soil has a mostly dry surface that loses very little water. Field water losses between emergence and the 4th true leaf are generally less than 0.05 inches per day. As the cotton plant begins to increase in size and photosynthetic leaf area, it increasingly uses water and a significant portion of carbohydrates produced by photosynthesis are used to build a larger root system. After the exceedingly low evaporation rates during the immediate post-planting period, a significant increase in ET occurs as the leaf area and plant canopy develop.

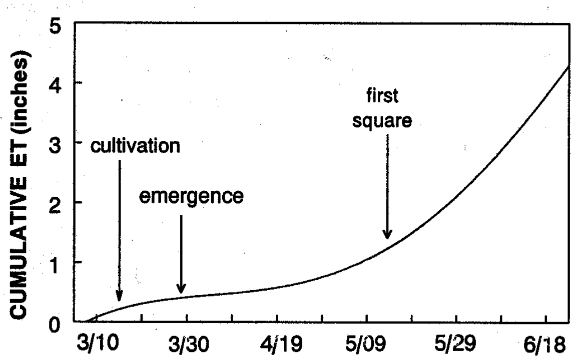

Figure 2. Generalized relationship between time of year (and a few specific growth stages) and cumulative evapotranspiration (ET) in cotton. Average of long-term data from West Side REC studies (Munk et al).

As the weather warms and day length increases, the cotton canopy begins to expand at a high rate and water use correspondingly increases with it. For typical early April plantings the rate of water loss for post-squaring cotton (late May) soon increases to 0.15 inches per day with plant roots commonly observed to a depth of 18 inches or greater. Between late May and early June, a transition in plant water status begins to occur. The increasing rate of crop water loss cannot be met by the expanding root system and the plants water status begins to decline. The rate of declining water status will depend on many factors including soil type, root depth, and evaporative demand.

Since early root growth and function can be negatively influenced by the addition of cold irrigation water, irrigating too early can reduce yields and balanced irrigation scheduling approaches are recommended.

In a year such as 2001, however, we have seen exceedingly high average daily heat units and temperatures in May. In addition, we need to consider the extent of and degree of damage to the cotton root system as we go into the hot summer. In plants where the tap root and even early secondary roots were severely damaged by seedling diseases and even drying soils due to high temperatures and winds, it was a wise decision for growers to look at these root systems and decide to apply the first in-season irrigation a week or more earlier than "typical". In most fields with later plantings, less seedling disease damage to roots, and acceptable soil water availability in the upper foot of soil, a more typical starting date for irrigation would be a good decision.

For surface-irrigation methods such as basin, border or furrow systems, 5 to 8 acre-inches of water are commonly applied per irrigation event. This can be well above the amount of water required to replenish soil water loss in many cases and can result in irrigation efficiencies (IE) of less than 60 percent. Using proven irrigation scheduling approaches such as the soil water depletion or pressure chamber techniques, <u>typical soil-water deficits that limit damaging water stress in San Joaquin Valley cotton range from as little as 2 to over 3.5 acre-inches of water</u>. Applied uniformly, this is the maximum amount of water needed to restore soil moisture levels at the time of first seasonal irrigation. Irrigation methods that achieve a uniform application of water, in amounts similar to the deficit, will stand a good chance of being economical and allow opportunities to reduce early-season water applications while maintaining an effective irrigation event.

Soil Conditions and Rooting Depth Vary

If soil conditions (texture and rooting depth) are on the "light" side and large quantities of plant-available water can't be stored, optimum first irrigation timing tends to be in late May, a time where there are relatively small plants. A water deficit of 2 to 2 1/2 inches is typical of these locations (Figure 2), and it can be common to over-irrigate, depending on early water intake rates. Unless early season intake rates are very low, pressurized systems such as sprinkler and drip offer the most opportunity to achieve high irrigation efficiencies. Although the distibution uniformity (DU) of surface and pressurized irrigation systems may not differ greatly, the benefit of pressurized systems comes from the fact that volume can be easily controlled (reduced when desired).

Under moderate to high soil water storage conditions, first irrigation dates are often pushed back into early June. The larger plant canopy and extensive root system of these plants at this time often produces soil water deficits of 3 or more inches. Although some tightly packed sandy loam soils have low infiltration rates that limit furrow soil intake to volumes in the desirable range, in many instances, sprinklers continue to be a good option if the goal is to increase irrigation efficiency (IE).

Modifications to furrow and flood irrigation systems that minimize excessive water application can also be used successfully. Alternate furrow, use of furrow "torpedoes", shortening irrigation runs and delivering water at high application flow rates are all examples of methods that can increase distribution uniformity and / or application efficiency of the first seasonal irrigation.

Soils that have the highest water storage capacity, that are planted early, and have few impediments to early root growth will often have optimum first irrigation scheduled in mid-June. This translates to a soil water deficit that approaches 4 inches of water. Irrigation systems that apply 4-5 inches uniformly to the upper portion of the soil profile will optimize irrigation efficiency and maintain preferred plant water status in the early- and mid- season.

For best practices in scheduling irrigations, avoid using calendar dates. They may succeed some years, but may result in unnecessary irrigations or yield loss due to excess stress in other years. Early and mid-afternoon measurements of leaf water potential (LWP) have been demonstrated as highly successful scheduling tools. This reading integrates the impacts of soil, root and atmospheric conditions on plant water status. When fields are adequately sampled, LWP measurements are useful for a balanced evaluation of current plant water status, and can be used with earlier sample data to help project an upcoming irrigation event.

In a tight water year (such as 2001), consider the following:

- Try to fine-tune irrigation management decisions to individual fields where possible
- Consider use of alternative furrow, surge or sprinkler irrigation to reduce irrigation amounts where soil conditions and available equipment / personnel make it possible
- Avoid excessive and too-frequent irrigations which can "build" plants of a larger size than desired and supportable later in the growing season *(this can be a hard "call" since early plantings with weak root systems will need more frequent irrigations to avoid stress and will have shallower-than-normal roots)*
- Avoid water stress more severe than about –20 to –21 bars LWP in Acalas and CA Uplands (–23 bars in Pima) through about 7-14 days past peak bloom if possible. This will help avoid fruit loss and impacts on fiber development due to water and heat stress

MANAGEMENT IMPACTS ON SOME FIBER PROPERTIES

Bob Hutmacher

High quality cotton has been achieved in California due to a broad range of conditions related to both the natural environment in which we live and many conscious decisions made by growers and industry to pursue excellence in fiber quality. These factors include:

- A Mediterranean-type climate, with a long growing season, warm to hot summers and long periods without rainfall
- Long-term public and private plant breeding and marketing efforts in which fiber quality characteristics have been a primary focus in variety selections
- Continuing improvements in management practices during periods of fiber development, and development of better tools for harvest preparation, and guidelines for effective and timely harvest aid use
- Development of improved machinery for picking, storing in modules, and ginning equipment to preserve high quality

All of these components can have important impacts on fiber quality, and should not be underestimated. Across the Cotton Belt, there is widespread agreement that probably the most important management decision impacting many fiber quality characteristics is choice of variety. This has been the basis of the development of the Approved Acala and Approved Pima variety program of the San Joaquin Valley Cotton Board over many years. It still is important to recognize, however, that even though variety choice goes a long way toward determining potential to produce a high quality crop, there are some management factors that can influence fiber quality. There are of course a wide range of special cases (severe water stress at several stages of fiber development, improper herbicide use or other practices that terminate crop development prematurely) that can impact fiber quality components, and those are too detailed to cover briefly here. There also are management and variety choice factors which can impact fiber contamination issues (leaf, trash, seed coat fragments, etc.) rather than actual fiber characteristics, and these are also too detailed to briefly review.

Particularly in a water-short year with lousy commodity prices and budget incentives to reduce mid and late-season inputs such as irrigation water, instead we'll cover some potential for management impacts on some fiber properties.

Older research reviewed by Hake et al (CA Cotton Review, Vol. 7, Dec., 1988) and Kerby and Wilkins (CA Cotton Review, Vol. 27, Oct., 1992), plus more recent work summarized by Bradow and Davidonis (J. Cotton Sci. 4:34-64) and Hutmacher et al (Beltwide Cotton Proc., 2001) agree on some basic findings with respect to impacts of factors such as irrigation practices and harvest aid timing. Any of these can be reviewed for a more in-depth analysis.

Phases of Fiber Development and Timing of Production of the Boll Load. Fibers develop over a long time period, beginning with the initiation and differentiation of epidermal cells of the seeds, progressing through phases of elongation, and secondary thickening of the fiber cells. Differential Initiation of fiber cells normally takes place within a few days prior to anthesis (opening of a flower). The primary elongation phases lasts roughly 20-24 days post-bloom, while secondary wall thickening starts within 15-20 days after flowering and continues for 3 to 4 weeks or slightly more under some conditions.

It is known that fiber quality components such as length, strength and micronaire vary with location in the plant canopy. These differences then represent the composite impacts of the environmental conditions (humidity, temperature, sunlight limits) as well as carbohydtrate and nutritional constraints in effect at different times during the production season. This produces a complicated picture in which, depending upon the field and the year, you might have a crop made up mostly of early-set fruit, or mostly late-set fruit, or generally a better situation in which fruit are set over a longer time period. This fruit distribution is an important thing to consider when trying to interpret problems with fiber quality and what you might do about it.

Irrigation Management Impacts

Timing of the last irrigation of the season is certainly a decision with potential to impact fiber. The choice of last irrigation timing is a compromise between avoiding late water stress severe enough to impact fruit retention or quality, and the need to finish off the season with time for proper defoliation and timely harvest. Too much water stress can cause boll shed and arrested fiber development (shorter, immature fiber, micronaire problems).

Too late a final irrigation can promote late boll set where inadequate heat units for maturation, difficulties with defoliation and weather-related impacts on harvest can become serious problems. In earlier work, UCCE Specialist Don Grimes and colleagues demonstrated that plant stress that impacts fiber length and strength in Acala varieties is generally quite severe, at –23 to –25 bars LWP or worse.

As part of an irrigation study in Acala and Pima, we found that the strongest impacts of irrigation management on micronaire and strength were largely through any impacts on the number of late-season bolls with limited time for development. Fiber strength of upper canopy, late-season bolls was reduced more under water stress than with similar levels of leaf water potential during earlier stages of development. Part of this was related to reduced photosynthetic productivity and nutritional limitations in the late-season.

We consistently found that higher irrigation levels produced more late-season, top bolls, resulting in lower fiber strength, lower micronaire upper canopy bolls than with more moderately-stressed plants. Higher levels of water stress (leaf water potentials below –22 to –23 bars in late-bloom and beyond) produced far fewer late-developing bolls, reduced fiber strength in mid-canopy bolls, and increased micronaire more on existing bolls. Similar patterns were seen in both high and low early fruit retention years, although with fewer late-season bolls in high fruit retention conditions, average fiber strength was less-affected.

Other Factors Where Management Can Have Impacts.

- **Potassium Deficiency—**Potassium is needed during early stages of fiber elongation, so this nutrient deficiency can have a significant effect on fiber length under moderate deficiency, and can even impact micronaire and strength in severe cases
- **Early Termination Associated with Early Harvest Aid Applications, Severe Water Stress** - particularly where the late, top crop is a large part of total yield, early termination can impact late-boll fiber length, strength and micronaire
- **Verticillium, Early Decline in Pima, Compaction, Severe Salinity, Late Plantings** - Disease problems and cultural or soil factors which involve poor plant health and/or delayed fruit development can impact fiber length, strength and micronaire - management practices (crop rotation, soil condition improvement) that lessen impacts can improve fiber quality

ANNOUNCEMENTS

UNIVERSITY OF CALIFORNIA COTTON PRODUCTION MEETINGS — 2001

- **JUNE PRODUCTION MEETINGS :**
  - KINGS / TULARE COUNTIES — Tuesday, June 19 — 9:00 to 12:00 noon
  - KERN COUNTY — Wednesday, June 20 — 9:00 to 12:00 noon @ Shafter Res. Center
  - FRESNO COUNTY — Thursday, June 21 — 9:00 to 12:00 noon @ West Side Res. Center
  - MADERA / MERCED COUNTIES — Thursday, June 21 — lunch at noon (then 1 -2:30PM meeting)
- **JULY PRODUCTION MEETINGS :**
  - KINGS / TULARE COUNTIES — Tuesday, July 17 — 9:00 to 12:00 noon
  - KERN COUNTY — Wednesday, July 25 — 9:00 to 12:00 noon
  - FRESNO COUNTY — Thursday, July 26 — 9:00 to 12:00 noon
  - MADERA / MERCED COUNTIES — not yet scheduled

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COTTON FIELD DAYS - University of CA, USDA-ARS & CA Dept. of Food and Agriculture participating

- UC Shafter Research and Extension Center - Tuesday**, September 18, 2001**
  (contact Brian Marsh (661) 868-6210 or Bob Hutmacher (661) 746-8020 for more information)

- UC West Side Research and Extension Center - Thursday**, September 20, 2001**
  (contact Dan Munk (559) 456-7561 for more information)

- Conservation Tillage Field Day and Demonstrations - Tuesday, **June 26, 2001**
  (Conference and Field Day highlighting equipment for conservation tillage, plus research and grower experiences with these systems to date—contact: Jeff Mitchell (559) 646-6565

STEVE WRIGHT SABBATICAL LEAVE - (May 2001 to February 2002)

Steve Wright began a sabbatical leave from his research and extension duties in Tulare County with the University of CA Cooperative Extension beginning May 22, 2001. He reports that he will be visiting research scientists and growers in other states and countries, and working on research reports and manuscripts during this time, but will look forward to returning at the end of February 2002 with some new skills and ideas. We wish Steve well and look forward to hearing about and "testing" him about some of those new ideas and skills!

During his sabbatical, he has made arrangements that you can call the following individuals with questions:

Cotton or Agronomy, call Bruce Roberts (Kings County UCCE) at (559) 582-3211 ext 2730

Weed Control or Small Grains, call Ron Vargas (Madera County UCCE) at (559) 675-7879 ext 212

Winter Forages, call Carol Frate (Tulare County UCCE) at (559) 685-3309 ext 214

On-Going Research, call Lalo Banuelos (Tulare County UCCE) at (559) 685-3309 ext 234