August 2001

BOLL MATURITY & BOLL OPENING DATES FOR LATE SEASON FLOWERS

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Decisions pertaining to crop termination and late season pesticide applications are best made with some understanding of the maturity status of late season cotton bolls. Research conducted by Silvertooth et al. (e.g.,1996 Cotton Report) has shown that our standard cotton heat unit (HU) system (86ºF/55ºF thresholds) can be used to predict boll maturity (hard, green boll; fiber elongation completed) and boll opening. This work indicates that approximately 600 HUs are required after flowering for a boll to reach physiological maturity, and an additional 400 HUs are required for the mature boll to open.

A translation of these HU requirements to calendar dates may prove useful to growers making decisions regarding crop termination or production of a top crop. The table below provides this translation by presenting expected boll maturity and boll opening dates at selected locations for four possible late season flower dates. Long-term normal values of HU accumulation were used to develop these dates.

Boll maturity dates are especially important since adequate water and pest control must be provided until boll maturity. For example, the boll maturity date for a flower opening on 9 September in Pinal County is 7 October. The grower in this example would need to provide water and pest control through this date to make these bolls. The final irrigation may be applied much earlier than 7 October to support the bolls in this example, as long as the plant has sufficient soil-water through this period.

The importance of boll opening dates to a timely and efficient harvest is obvious. In the example above, the boll from a 9 September flower would typically open about 3 November. Thus, the grower should plan on a final picking date in early November. Boll opening dates may also be important at higher elevation locations where early hard freezes can result in premature crop termination. Immature, late season green bolls may "sour" after a hard freeze, resulting in loss of both yield and quality.

One final point -- precipitation probabilities -- should be discussed as we conclude this discussion of late season boll development. The probability of precipitation decreases rather quickly in early fall with the decline of the monsoon. In most of AZ, the probability of fall precipitation reaches a seasonal minimum in mid to late October, then begins to increase again as the jet stream and its associated winter storm systems begin to impact AZ weather. Precipitation probabilities continue to increase through the remainder of the calendar year and well into the first two months of the new year. Late season rains can be particularly troublesome because evaporation at this time of year is low and soils are slow to dry.

The 2001 crop is running ahead of normal HU development timelines in most locations, which may lead to earlier termination, defoliation and harvest dates this year. Current long-range weather forecasts are encouraging for the fall season. Forecasts for both September and the 90-day period extending through November indicate a bias toward above normal temperatures. The forecast models do not predict any significant bias for fall precipitation. Long range precipitation forecasts rely heavily on the status of climate phenomena such as ENSO (El Niño-Southern Oscillation). At present ENSO is in the intermediate “No Niño” phase which provides forecasters with little if any guidance on future precipitation patterns. It is interesting to note, however, that ENSO is showing some signs of moving into the warm, El Niño phase which is commonly associated with above normal winter precipitation.

	----------FLOWER DATE----------							
	12 AUGUST		26 AUGUST		09 SEPTEMBER		23 SEPTEMBER	
Location	Mature	Open	Mature	Open	Mature	Open	Mature	Open
Aguila	07 SEP	25 SEP	22 SEP	16 OCT	11 OCT	25 NOV	06 NOV	NA
Laveen	03 SEP	19 SEP	19 SEP	07 OCT	06 OCT	30 OCT	26 OCT	15 DEC
Litchfld	04 SEP	20 SEP	19 SEP	08 OCT	07 OCT	02 NOV	27 OCT	19 DEC
Marana	05 SEP	22 SEP	20 SEP	10 OCT	07 OCT	06 NOV	29 OCT	NA
Mohave	04 SEP	18 SEP	18 SEP	05 OCT	06 OCT	30 OCT	25 OCT	09 DEC
Paloma	03 SEP	18 SEP	18 SEP	05 OCT	04 OCT	26 OCT	23 OCT	28 NOV
Parker	03 SEP	17 SEP	17 SEP	04 OCT	04 OCT	25 OCT	22 OCT	29 NOV
Pinal Co.	04 SEP	21 SEP	19 SEP	09 OCT	07 OCT	03 NOV	28 OCT	23 DEC
Queen Ck.	04 SEP	20 SEP	19 SEP	08 OCT	06 OCT	02 NOV	27 OCT	28 DEC
Safford	09 SEP	02 OCT	26 SEP	28 OCT	18 OCT	NA	29 NOV	NA
Yuma V.	04 SEP	20 SEP	19 SEP	07 OCT	06 OCT	29 OCT	24 OCT	02 DEC

NA : Maturity or Boll Opening After 31 December.