Cotton Field Check
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Maturing Late Season Bolls and Top Crop Evaluations - 2005

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Making decisions on late-season crop management requires evaluations of crop condition, including assessments of potential for a "top crop" (late-developing fruit) with potential to profitably contribute to final yield. Evaluations need to then be balanced against risks and costs associated with delays in readiness for harvest, potential impacts on fiber quality, and added input costs (irrigation, possibility of additional pest control and harvest aid costs). This type of analysis becomes more critical with low commodity prices, increasing input costs and the need to avoid fiber quality penalties.

Last Boll to Carry to Maturity? Depending on cotton type and boll characteristics, late-season blooms require about 750 to over 850 heat units ($DD_{60}F$) to mature to harvestable bolls (see article in June 2002 *Cotton Review* newsletter). Acala bolls are difficult to open with much fewer than 700-750 heat units even with timely use of harvest aids with good boll opening properties. This becomes important when you consider that daily heat units typically decline fairly rapidly as weather cools after mid-September (Table 1). An example of average time required to accumulate about 800 DD_{60} is shown in Table 1 based on long-term weather station averages at UC Shafter REC (Kern Co.).

Table 1. Bloom dates, corresponding dates when 800 heat units were accumulated from time of bloom at Shafter REC (Kern Co.) – 30-year weather data set.

Bloom date of last bloom carried to maturity	Estimated date 800 DD_{60} accumulated (to open mature boll)
8/01	9/23
8/08	10/05
8/16	10/21
8/24	11/10

Heat unit accumulations are typically lower in the central and northern SJV than this data shown for Shafter REC, generally requiring even more days to mature and open later-season bolls.

Counting Bolls - Relative Assessment of Top Crop
Bolls vary in size with cotton type and variety, environmental conditions during development, and node and branch position on plants, making this a somewhat difficult way to get a solid yield estimate. However, it can be useful in situations such as where you want to estimate whether or not a top crop has potential to significantly contribute to yield. Table 2 shows results of field evaluations with typical varieties over the past 7 or 8 years.

Table 2. Average number of bolls per foot to produce 1 bale lint/acre as a function of row spacing and cotton type (assumes about 34% gin turnout).

Type of Cotton	Average # of late-season bolls / Foot equal to one bale lint / acre as function of row spacing			
	30 inch row spacing		40 inch row spacing	
	Aver.	Range	Aver.	Range
Acala	8.5	7 to 10.5	11	9 to 13.5
Pima	21	18 to 24	28	25 to 31

Using the above table – example: If the "top crop" you estimate as likely to carry to maturity is 3 late-season bolls per foot, with 40" row spacing for Acala cotton, this would equal about an extra 0.27 bales/acre (3 bolls/ft divided by 11 bolls average/ft needed to equal 1 bale/acre).

We have seen quite a few fields (including research plots) where the "top crop" is too large a part of total yield potential to forfeit, but extending the growing season has to be approached with some caution.