

# UPLAND COTTON VARIETAL RESPONSE TO SHORT-SEASON VERSUS LONG-SEASON MANAGEMENT PRACTICES

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1998 was a year which brought many changes in the variety situation in the CA cotton industry. Many of the management recommendations currently in place for CA Upland cotton are based upon years of research on varieties such as SJ-2, GC-510 and Maxxa. The introduction of some potentially widely-different varieties which were developed in environments outside of CA in most cases represents a real challenge in terms of identifying the most suitable management practices for best results under SJV conditions. These "newly-available" varieties that will come into CA will have the name designation "CA Upland" (official designation given by the San Joaquin Valley Cotton Board) to distinguish them from the "SJV Acala" designation given to the Upland varieties that come out of the "approved variety" program of the Board.

Some of these varieties have been grown on an experimental basis by seed companies in agronomic trials prior to 1998, so there is some general knowledge on preferred management practices that has been accumulated by the seed companies. Some of the varieties likely to be available in 1999 and beyond were also grown on a range of field-scale locations on grower fields in 1998, although these were generally in very late plantings (May 15 to June 10). Data from a year with such late plantings will be useful, but is not representative of the true range of crop responses likely under what will hopefully be a more typical year in 1999 and the next couple of years after 1999.

**1999 Field Tests at Shafter REC and West Side REC.** Trials initiated in 1999 at the West Side and Shafter REC's begin to look at the impact of combinations of two planting dates (mid-April versus early May), two irrigation treatments and two growth regulator regimes on growth, yield and quality responses of three cotton varieties (one approved SJV Acala (Maxxa) and two CA Upland varieties (Germaines GC-204 (early-mid-maturity) and DPL Nucleotone 33B (mid-maturity))). These varieties represent at least some of the range in expected differences in growth habit and estimated maturity across the CA Upland varieties when compared with an Acala standard.

Goals of the testing program will be to evaluate the growth characteristics, earliness, seedcotton yield, turnout, and lint quality characteristics of specific, representative varieties of Upland cotton under irrigation and growth regulator management practices designed to impact the duration of the fruiting cycle and length of growing season.

Some of these varieties can be classified as having the potential to be "early-maturing", "medium season", or "full-season" varieties. While years like 1998 can demonstrate the utility of "short-season" varieties in making a good crop within the constraints of a limited growing season, there are many years in CA where the growing season duration is much greater than in 1998. We feel that it is important to identify the "plasticity" of some varieties representative of part of the range of growth habits, maturity classes under management practices covering a range of strategies, including:

- (a) conditions typical of a shorter growing season requiring a more compressed fruiting period (perhaps more water stress and earlier or higher rates of growth regulator)
- (b) long-season management where goals may be to build a larger framework / more fruiting sites, with a different management scheme involving less water stress / more growth regulator application which are started later, and, if boll load warrants, consideration of additional foliar fertilizer applications during flowering to "push" the plant to take advantage of a long growing season
- (c) with two planting dates, two irrigation/fertilizer regimes and two growth regulator treatments and the eight combinations (2 x 2 x 2), there can be a range of conditions in between the extremes mentioned in (a) and (b) above

Basic plot layout will be four-row plots, with a length of about 85 feet (allowing three plots per 280 ft plot length, with a 20 foot alley in between), with three replications. Data collected in each plot will include lint and seed yield and quality characteristics. Six pound seedcotton samples will be collected in each plot, ginned at the Shafter REC, and analyzed for quality characteristics of each variety. Final plant mapping will be done on select varieties and treatments (as resources allow).

The crop management protocols (irrigation, ground preparation and cultural practices) will otherwise be typical of the WSREC operations for cotton. Shafter personnel and Kern County UCCE staff will be assisting at planting time and in separating out varieties and planters for the proper assignment to plots.

These varieties likely to come into the SJV largely represent an opportunity of unknown proportions to CA cotton growers. Tests on grower fields in 1998 were largely planted very late under the governor's emergency exemption, so may or may not truly represent the potential of these varieties in improving grower profitability. It is vital that we get some UCCE testing programs underway in 1999 and beyond that will begin to answer some questions regarding management approaches with these varieties. Information is needed by the growers to make some hard decisions on variety choices. It is important that at least some of these tests occur under well-controlled conditions so that assessments can be made of the likely range of varietal performance in both yield and quality characteristics. Varietal evaluations important to the growers and industry include not only yield, but performance, since quality characteristics of the new variety choices will impact both the reputation of CA SJV cotton and potentially the impact of the premium price now paid to growers of "Approved Acala" varieties approved by the San Joaquin Valley Cotton Board. Data from this project will eventually be described in the CA Cotton Review, and will also be mentioned in crop advisory updates printed in handouts at Production meetings.