



## PLANTING DATE MANAGEMENT

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Survival, or short term sustainability, for many Arizona cotton farms is directly linked to production efficiency. It is therefore important for us to make the most of the time that we have a crop in the field in terms of yield and productivity. Getting a crop off to a good start is critical to an early fruit set, establishing strong fruit retention, and making the most of the primary fruiting cycle. Achieving earliness in a cotton crop is also important for insect management considerations (i.e. whitefly), and to minimize exposure of the primary fruiting cycle to the hot, humid monsoon weather which increases fruit loss and abortion.

Irrespective of whether a person is trying to utilize a reduced or a full-season production strategy, it is important to complete the primary fruiting cycle in an efficient manner. Accordingly, we need to set as much fruit as possible in the early stages of the fruiting cycle in an attempt to establish a significant fruit load before we encounter mid-summer monsoon weather patterns. Planting date management and variety selection are extremely important steps in terms of setting the crop off to a good start, achieving earliness, and establishing a strong yield potential.

Cotton farmers commonly recognize the value in planting a crop early, however, when considering the overall efficiency of our cotton production systems, we must ask “how early is best, and what are the dangers of planting too early or too late?” We have attempted to answer these questions by conducting a series of planting date experiments across the state. Our primary goal has been to describe a range of dates and conditions which represent an optimum time for planting cotton. One thing we have found is that year to year variation in spring weather make calendar dates very general guidelines for planting cotton. The use of heat units (HU, 86/55° F thresholds) accumulated since 1 January (HU/1 Jan.) serves as a much better measure of conditions leading to an optimal time or “window” for planting a crop of cotton across the state. If we plant a crop too early, and the stand is poor or the crop experiences cold weather stress, yield potentials will be sacrificed. Alternately, if we plant cotton too late, the plants commonly become very vegetative, difficult to manage, and lower yielding.

Cotton seeds require rather warm soil conditions, and cotton planting can start as soon as soil temperatures are warm enough, to establish a healthy crop of seedlings.

- **An optimum soil temperature condition is described as 65° F at seeding depth at 8:00 A.M. for three consecutive days, with a favorable five day forecast. Soil temperatures are acceptable for planting as they approach 60° F, and the forecast is good. Planting into soil conditions with temperatures less than 55° F will provide a high probability for poor vigor and seedling disease problems.**
- **In terms of HU/1 Jan., we have found that at least 300 to 400 HU/1 Jan. are required in any given area before we can expect soil temperatures to approach acceptable levels.**
- **A favorable five day forecast is dry weather with highs above 80 oF and lows in the upper 40s or higher.**

From an agronomic point of view, planting cotton past an optimum range commonly results in losses in yield potentials and increases in vegetative growth tendencies. The cut-off point for optimum planting dates will depend most heavily on the variety type, as shown in Figure 1. Full season, more indeterminate plants, must be planted relatively early, and should not be delayed past 700 HU/1 Jan.. Plantings of medium maturity varieties can proceed to about 800 HU/1 Jan., and plantings of short season varieties can extend to about 900 HU/1 Jan..

It is important to note that any variety (full, medium, or short season) can respond favorably to an early, optimal planting date, but the more critical consideration is that of switching varieties to more determinate (shorter maturity) types if time constraints or weather conditions significantly delay plantings, or if replanting is needed. In terms of variety selection and planting management, it is also a good idea to avoid planting varieties with smaller, less vigorous seeds under cooler conditions, save these for warmer soil conditions.

Weekly cotton advisories are being distributed in every cotton producing area in Arizona. The early season cotton advisories provide up-to-date information on HU/1 Jan. accumulations for distinct locations within each cotton producing area of the state, as well as general soil temperature conditions based upon local AZMET weather station data. Growers can access this information and use it as a general guide for planting date management. And finally, even with the planting windows we have described and the use of heat units, it is always a good idea to check out the soil temperatures for early

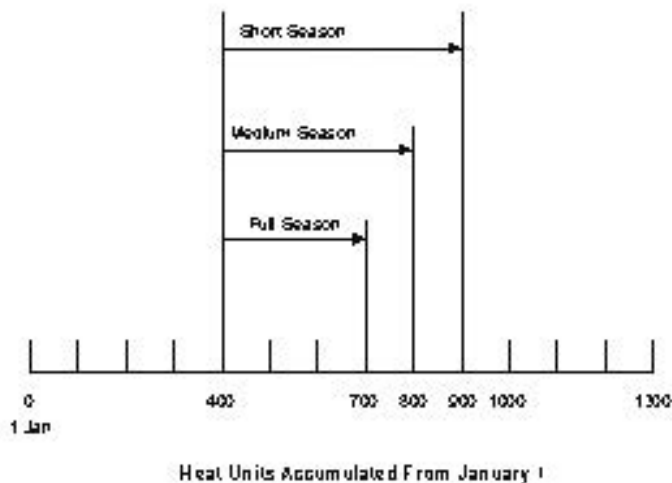


Figure 1. General recommended planting date windows for different maturity type varieties grown Arizona ( J. C. Silvertooth, Univ. of Arizona)



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