



# Choosing Which Cotton Varieties to Grow

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## Variety Selection

Selecting productive cotton varieties is not an easy task, especially in Oklahoma where weather can literally make or break a crop. Producers need to compare several characteristics among many different varieties, then key the characteristics to typical growing conditions. The growing environment from year to year cannot be controlled, but varieties can be selected based on desired attributes. It is very important to select and plant varieties that fit specific fields. Do not plant the entire farm with a single variety, and try relatively small acreages of new varieties before extensive planting. When it comes to variety selection in Oklahoma, several factors are important to consider.

## Maturity (Earliness)

Scrutinizing the relative maturity rankings provided by seed companies will be beneficial. Don't expect a mid- to full-season cotton variety to perform well in a short-season environment, where an early or early- to mid-season variety might work best. Many longer season cotton varieties are better adapted to areas with longer growing seasons, although significant gains in yield may sometimes be obtained in years with warm September and October temperatures. Longer season varieties will typically do much better when planted earlier, then provided an excellent finish. For later plantings, early- to mid-season maturity varieties may be better. For late plantings or replant situations, early maturity varieties may be better. Relative maturity for most varieties gets compressed when moisture stress occurs. With drought stress, maturity of longer season varieties will not be expressed to the degree that would generally be noted when under high water and fertility regimes.

## Pounds

Yield potential is probably the single most important agronomic characteristic, because pounds do drive profitability and provides for the safety net of higher actual production history (APH) in case of catastrophic loss of acres. The benefit this can provide from the crop insurance perspective is important in our high risk area. Yield stability across environments is going to be important, and finding a variety that has the ability to provide high yield across varying water inputs is critical.

## Fiber Quality

Producers should also consider lint quality. Progress has been made in terms of fiber quality during the last several years. Significant improvements have been seen in overall

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fiber quality packages associated with modern varieties. Staple is generally good to excellent for most new varieties. Many things can affect crop micronaire, including overall environment, planting date, variety, early season fruit loss with later compensation, excessive late season irrigation or rainfall, seedling disease, early season set-backs due to hail damage, blowing sand, thrips, etc. Fiber strength has also significantly improved and many newer varieties tend to be at least 30 g/tex. Length uniformity can be affected by staple, maturity and harvest method (picker harvested is typically higher than stripper harvested). Higher maturity fiber generally results in better uniformity. Leaf grade can be affected by density of leaf hairs on specific varieties in some years. Generally, cool, wet fall conditions can lead to lower quality leaf grades for varieties which tend to be hairy. In drier harvesting environments, these differences tend to diminish.

Color grades are basically a function of weathering or exposure of the fiber on the plant to wet conditions. The highest quality that a cotton boll can have is on the day that it opens. After that, if conditions favor microbial growth (warm, wet conditions). An early freeze can affect immature cotton by reducing its color grade. Bark contamination is generally also driven by significant late season rainfall followed by a freeze. In some years, this can't be easily managed if stripper harvested. Conversely, picker harvesting can significantly reduce or eliminate bark contamination.

## Storm Resistance

Storm resistance is still a concern for growers in our area. Even though many producers have adopted less storm-resistant cotton varieties during the last several years, and generally done well with them, the overall management system the producer adopts can be important. Under significant moisture stress on dryland, some newer varieties may provide an unacceptable level of storm resistance, especially if the field is left to a freeze. Producers planning to execute a sound harvest aid program as soon as the crop is mature can probably grow some fields with less storm-resistant cotton. However, having large acreages of varieties with low storm resistance might be a prescription for disaster if the right environmental conditions align at harvest. Do not plan to leave looser cotton varieties in the field until a freeze conditions the plants for harvest. Unacceptable pre-harvest lint loss is likely to result. Higher storm resistance varieties are better adapted to our harvesting conditions and they are more likely to survive damaging weather prior to harvest without considerable seedcotton loss. Inquire about the storm resistance of

any variety on your potential planting list. If choosing a variety with low storm resistance, plan and budget ahead for a good harvest aid program that will achieve an early harvest. Good storm resistance data are now being provided by most companies and we visually evaluate all Extension and research variety trials for this attribute. For those planning to harvest with spindle pickers, varieties with higher storm resistance may possibly result in reduced picker harvesting efficiency.

## Disease and Nematode Resistance/Tolerance

Producers should not plant the entire farming operation to one cotton variety. A question should be “do I have plant diseases or Root knot nematodes in this specific field?” Although we have not been able to identify substantial acreage with this pest in Oklahoma, varietal tolerance or resistance will be critical for management. It is important to know which disease is present. If there is a problem with a wilt disease, but don’t know what it is, then have the problem identified. If known Verticillium wilt pressure is present, then take a look at Texas A&M AgriLife Research and Extension testing data from several locations investigating variety performance under constraints from this particular disease. The same should be considered for Fusarium wilt/Root-knot nematode issues. Many times varieties which do well under Verticillium wilt pressure may not be the same ones which are resistant with Fusarium or Root-knot nematode. Bacterial blight is an occasional problem in the region, and the only way to manage this disease is planting resistant or immune genetics. There are several varieties that can provide high levels of resistance/immunity. To determine the disease reaction of many currently available varieties, visit the Texas A&M AgriLife Research and Extension Center website at: <http://lubbock.tamu.edu>

## Biotech Trait Types

Producers need to ask themselves several questions. “Do I want a herbicide-tolerant variety, and if so, which system?” Weed control has been catapulted forward by the advent of transgenic Roundup Ready® Flex, GlyTol®, Liberty Link®, and Glyto® plus Liberty Link® (stacked) cotton varieties. The agronomic capabilities of glyphosate-tolerant cotton varieties continue to improve and the weed control system it enables is very effective, if properly executed. The Liberty Link® system has thus far been more widely adopted in other regions, perhaps due to our hot and dry/early season environments in some years. The widely anticipated GlyTol®, the proprietary glyphosate tolerance trait from Bayer CropScience (BCS) has been approved by regulatory agencies and has been launched. In 2013, there were several varieties with GlyTol®/Liberty Link® stacked technologies.

As for insect protection, for several years now, Monsanto’s Bollgard® II and Dow AgroSciences’ Widestrike® technologies have provided outstanding lepidopteran pest control. In 2014, TwinLink® Bt from BCS will be available. Based on local pricing, these technologies have been widely planted on Oklahoma cotton acres. Because of the lack of disruption of beneficial

arthropods by insecticides used to target bollworms, etc., aphids will likely not be flared, which is of considerable value. In the near future, Bollgard® II, Widestrike®, and TwinLink® technologies will be “stacked” with an additional Bt trait (Syngenta’s VIP 3A) to improve the control spectrum of caterpillar pests and for resistance management issues.

## Variety Testing Publications

If disease issues are not concerning, then scrutinize all possible university trial data available to see how a specific variety has performed across a series of environments, and if possible, across years. It is best to consider multi-year and multi-site performance averages when they are available. However, due to the rate of varietal release, many new varieties are sold that have not undergone multi-year university testing, or perhaps no university testing at all. The 2012 and to a certain degree, 2013 variety testing programs were adversely affected by drought and results are available here: <http://cotton.okstate.edu/variety-tests>

SeedMatrix is a recently developed web-based application that enables users to analyze test plot data from multiple sites in a simple format. SeedMatrix allows the user to analyze variety trial data on cotton, wheat, corn and soybean. The application can analyze the data to find best varieties based on multiple criteria selections, including geography, soil texture, irrigation type, as well as technology traits. Although it is always best to identify varieties that perform well locally, sometimes a tool such as this is useful to help identify yield and fiber quality stability across a large number of sites. It can be found here: <https://seedmatrix.com>

## Seed and Technology Cost

Cost should not necessarily be the primary reason for selecting a variety, but it is important. The value of a high yielding cotton variety with biotech traits to ease management requirements across a large number of acres is a serious consideration. According to USDA-AMS Cotton Varieties Planted - 2012 Crop, the Abilene Classing Office indicated producers planted about 100 percent of the acreage to Roundup Ready® Flex varieties, and about 98 percent to Bollgard® II or Widestrike® Bt technologies. The Plains Cotton Growers Seed Cost Comparison Worksheet can certainly be useful for planning purposes, and they annually update the Microsoft Excel spreadsheet. This file can be used within your Web browser, or downloaded and saved to your computer. About 100 varieties of many types can be found in the spreadsheet. The user can select up to 10 varieties to simultaneously compare total seed and technology fee costs based on a specific seeding rate. The row spacing and seed per row-ft can be entered by the user. This then calculates a seed drop on a per acre basis. Based on published pricing for the various seed varieties and technology fees, the cost per acre is automatically calculated. It should be noted that the pricing used in the spreadsheet does not include premium seed treatments or any incentive program that might be provided by the various companies. The Seed Cost Comparison Worksheet is available here: [www.plainscotton.org](http://www.plainscotton.org)

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