

# Cotton Comments

## Seed Quality

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Growers strive to plant quality seed. Every bag of seed by law bears a label that includes, but is not limited to, the purity, state of origin, date of testing and germination of that seed lot. Regulatory agencies, such as the Arkansas State Plant Board, sample seed lots at random for testing to ensure that seeds meet or are within the tolerance of the conditions stated on the label or those required by law to be sold in Arkansas. A stop-sale will be issued for seed lots that are not within AOSA (Association of Official Seed Analysts) tolerances or do not meet these requirements.

Because seeds are alive and can deteriorate over time, it is not practical to state the absolute germination value on the label. Labels generally indicate a minimum germination of 80 percent, standard germination. Other measures of quality, such as the cool test, can vary greater than the standard germination test. Slight variations in temperature and testing procedures can cause large differences in cool test germination. It is not practical to state this information on the tag. However, this information can be obtained from most seed companies.

The purpose of this document is to help you understand how this information is obtained and how to use it for your benefit.

### Standard Germination Test

The standard germination test measures seed viability, which is the potential of seed to grow under favorable

conditions. Seed samples are maintained for alternating periods at a temperature of 68° F for 16 hours and 86° F for 8 hours to simulate night and day conditions, respectively, or at a constant temperature of 86° F. Four replicates of 100 seed are placed on a moist paper towel. The seed is then covered by another moistened paper towel, wrapped, and placed in a germination chamber. Counts are taken at 4 and 12 days when temperatures alternate or at 4 and 9 days when temperatures are constant. Test results are expressed as a germination percentage, which is further defined as the percentage of normal seedlings that develop during the test period. A minimum value of 80 percent should be expected for this test, regardless of the temperature regime used.

### Cool Germination Test (Texas Cool Test)

The cool test is a better measure of vigor than the standard germination test. The cool test measures the ability of seed to grow under the stress of cool temperatures. Seed samples are maintained at a constant temperature of 64.4° F for seven days. The seeds are prepared and placed in the germination chamber using similar procedures as in the standard germination test. Counts of seedlings with radicles (roots) 1.5 inches or longer are taken at seven days. A minimum value of 60 percent should be expected for this test.



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## Obtaining Test Results

Analysis certificates can be obtained for specific varieties and lot numbers from most seed companies. With the variety and lot number in hand, germination results may be obtained by calling:

<b>Delta and Pine Land Co.</b>	<b>(800) 511-7333</b>
Deltapine, Paymaster, and Sure-Grow varieties	
<b>Stoneville Pedigreed Seed Co.</b>	<b>(800) 844-7627</b>
	<b>(901) 375-5800</b>
<b>Phytogen Seed Co.</b>	<b>(800) 258-3033</b>
<b>Bayer CropScience</b>	<b>(866) 992-2937</b>
FiberMax varieties	
<b>Beltwide Cotton Genetics</b>	<b>(901) 861-3241</b>

Test results may also be obtained for a fee from the Arkansas State Plant Board by sending two pounds of seed to:

Arkansas State Plant Board  
Seed Division  
#1 Natural Resources Drive  
Little Rock, AR 72205

Payment of fees is necessary before results are released. It is recommended that payment be enclosed with the sample. Fees include:

\$8.00	Standard germination
\$16.00	Standard germination and seed purity
\$12.00	Cool germination
\$3.00	Handling if sample delivered to field inspector
\$25.00	Priority handling (sample moved ahead of all non-priority samples)

Any of these tests or a combination can be performed from one sample. Please allow a minimum of two weeks for results from a standard and a cool germination test sample.

## Recommendations

These tests are guides and should be used accordingly. If planting conditions are ideal, the results from a cool test may underestimate actual emergence, causing a grower to plant too many seeds. If after planting, however, soil temperatures drop to 60° F or lower, the resulting emergence might be well below the cool germination test. Use this information to better set planting dates and seeding rates.

Minimum conditions for planting include a 68° F soil temperature at a two-inch depth mid-morning for three consecutive days and a favorable five-day forecast. Heat unit accumulation (DD60s) of 20 heat units or greater is desirable for the five-day period after planting.

However, if planting under less than optimal conditions is necessary, choose seed lots with higher cool germination results to improve chances of obtaining an acceptable stand. The use of an infurrow fungicide is recommended where a history of seedling disease exists and/or when planting under less than favorable conditions.

Remember, replanting can be costly – extra expense, delayed maturity and possibly limited variety selection. Seed supplies for many of the popular varieties are very limited and may not be available if replanting becomes necessary. It is important to do things right the first time.

Make sure seed lot numbers are recorded on sales invoices when taking delivery of seed. It is beneficial to record the lot or lot numbers planted in each field. The variety and lot number will be among the first things asked for if problems occur.

Some growers have been known to pull seed samples from each seed lot and store the samples in a cool, dry location. A quart-sized plastic bag of seed with the seed lot written on the bag or with the tag from the bag attached will provide a suitable sample if needed. Partial bags of seed from each seed lot, stored in the barn in a cool, dry location away from chemicals or petroleum products, can also be a sample source if problems arise early in the season.

Planting early does not ensure earliness. Planting high-quality seeds in a warm and moist seedbed will result in fast germination and a more uniform emergence. A vigorous seedling will be susceptible to seedling diseases for a much shorter period of time, be able to outgrow the effects of early-season pests, help improve weed control by establishing a height differential, and set a course for earliness.