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Evaluating Cotton Seed Quality

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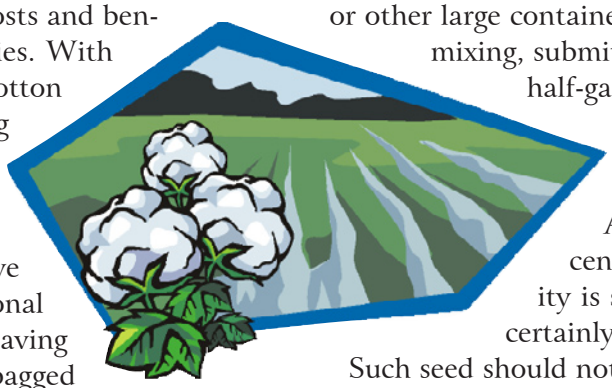
High-quality cotton seed is critical for establishing good stands. Over the last several years, producers have scrutinized costs and benefits of numerous new cotton varieties. With the increase in cost of most current cotton varieties and the use of new planting equipment, many producers are reducing seeding rates, placing even more importance on planting high-quality seed. Many growers have opted to continue to plant conventional cotton varieties and have continued saving seed to have it delinted, treated and bagged for planting the following season. Cool, wet fall conditions and failure of cotton to mature fully can reduce seed quality. Seed quality becomes more critical at the reduced seeding rates to which many growers have become accustomed. Producers who plan to save seed from conventional varieties are advised to consider evaluating seed quality prior to planting season, using procedures such as the free fatty acid test, germination tests and the cool-warm vigor index.



Determine Free-Fatty Acid For Fuzzy Seed

The **free fatty acid test** (FFA) is used extensively as a seed-quality indicator. The test is based on breakdown of oils into fatty acids and glycerol as seeds deteriorate. Free fatty acids usually build up under high temperatures and high seed-moisture conditions. A 1 percent FFA level is most commonly accepted as the upper level desirable for seeds.

First, producers should have an FFA test performed on each lot of fuzzy cottonseed. To obtain a good random sample, a seed lot should be sampled at 8 to 10 locations. Take about 1 quart of seed from each of the locations, place all samples together into a tub or other large container, then mix them well. After mixing, submit at least a 2-pound (about a half-gallon) final sample to a reputable laboratory for FFA testing.

An FFA greater than 1 percent indicates that seed quality is suspect, suggesting that seed certainly have started deteriorating. Such seed should not be used for planting. However, an FFA level of 1 percent or lower does not necessarily guarantee that seed is of high quality.

Conduct Germination Tests for Seed Samples with FFA Less Than 1 Percent

If FFA is less than 1 percent, producers should have a standard warm germination test ($9/sample) and a cool germination test ($12/sample) conducted by a Texas Department of Agriculture (TDA) Seed Testing Laboratory (see listings below).

Texas Dept. of Agriculture

Giddings Seed Lab
P.O. Box 629
Giddings, TX 78942
(979) 542-3691

Lubbock Seed Lab
4501 Englewood Ave.
Lubbock, TX 79414
(806) 799-0017

Stephenville Lab
241 E. McNeill
Stephenville, TX 76401
(254) 965-7333

Expect at least a 2-week turnaround time for these analyses. For standard warm germination and cool germination tests, you can use fuzzy seed; however, after delinting and gravity table separation, germination percentages usually will be higher. Gravity table separation groups seeds based on density. Using this technique, low density seed are removed or "cut" from the rest. It is not unusual to see germination percentages increase by 10 to 20 percentage units after acid delinting and gravity table separation.

Determine Cool-Warm Vigor Index For Delinted Seed

After delinting, lower-quality seed may have to be "cut" with a gravity table at a level significantly greater than usual to secure higher-quality planting seed. After delinting and gravity separation, go one step further and have a cool-warm vigor index (CWVI) test performed by the TDA to give the best indication of overall seed quality. The CWVI is actually the combined percentage germination for the standard warm germination test (counted at 4 days) and the cool germination test. For CWVI analysis, take a representative 1-pound sample of acid delinted seed from several bags of the same seed lot. (Make sure not to combine lots or varieties. A separate sample should be sent for each variety and for each lot.) Send samples to the TDA Seed Laboratory ($21/sample). Expect at least a 2-week turnaround time. Add the results of the two tests (warm germination test counted at 4 days and cool germination test) to provide the CWVI.

After obtaining the CWVI test results, seed quality can be categorized into the following groups: "Excellent" = CWVI of 160 or greater; "Good" = 140 – 159; "Fair" = 120 – 139; "Poor" = Less than 120. CWVI results allow producers to make more informed decisions about planting times and planting rates for various seed lots. Seed with the highest possible vigor should be planted earlier in the season, or when planting conditions are less than desirable. Lower-vigor seed should be planted later in the season, when soils have warmed or conditions are more optimum for cotton stand establishment. Generally, there is nothing wrong with seed in the "Good" category; however, "Fair" category seed should be used mostly for late plantings or replanting, and "Poor" category seed should not be planted.

http://soilcrop.tamu.edu
http://cotton.tamu.edu

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