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Evaluating Cotton Seed Quality

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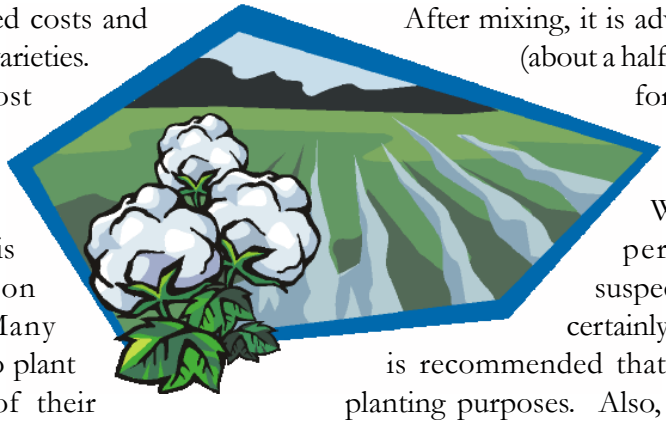
High quality seed is critical for establishing a good stand. Over the last several years, producers have scrutinized costs and benefits of numerous new cotton varieties. With the increase in cost of most current cotton varieties and use of new planting equipment, many producers are reducing seeding rates. Consequently, this places even more importance on planting high quality seed. Many growers have opted to continue to plant conventional varieties in many of their fields. In the process of doing so, they have continued the practice of saving seed to have it delinted, treated, and bagged for planting in the following season. Cool, wet fall conditions and immature cotton can reduce the quality of seed. These issues become more critical at the reduced seeding rates to which many growers have become accustomed. Producers who are planning on saving seed from conventional varieties are strongly advised to consider evaluating seed quality prior to planting season.



Determine Free-Fatty Acid for Fuzzy Seed

The **"free fatty acid test"** (FFA) is used quite extensively as an indicator of seed quality. This test is based on the breakdown of oil to fatty acids and glycerol as seed deterioration progresses. Free fatty acids usually build-up under high temperatures and high-seed-moisture conditions. The 1 percent level of FFA is the most commonly acceptable upper level for seeds.

First, it is suggested that producers have a FFA test performed on each lot of fuzzy cottonseed. In order to obtain a good random sample, the seed lot should be sampled at perhaps 8-10 locations. Take about 1 quart of seed from each of the locations, and place all samples into a tub or other large container, and then mix well. After mixing, it is advised that at least a 2 pound (about a half-gallon) final sample be taken for submission to a reputable laboratory for FFA testing.

When FFA is greater than 1 percent the seed quality is suspect and suggests that the seed certainly have started deteriorating. It is recommended that this seed not be used for planting purposes. Also, just because FFA level is 1 percent or less, it does not necessarily guarantee that seed is of high quality.

If FFA is less than 1 percent, it is suggested that a standard warm germination test ($9/sample) and a cool germination test ($12/sample) be conducted by a Texas Department of Agriculture (TDA) Seed Testing Laboratory.

Texas Dept. of Agriculture

Gidding 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 the analyses. For standard warm germination and cool germination tests, one can use fuzzy seed; however, one should recognize that after delinting and gravity table

separation, these germination percentages will usually be higher. Gravity table separation is the process where seeds are separated based on density using appropriate machinery. Low density seed are removed or "cut" from the rest using this technique. It is not unusual to see the germination percentages increased by 10-20 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" using a gravity table at a level which is significantly greater than is usually the case to insure that higher quality planting seed is obtained. After delinting and gravity separation, one should go one step further and have a cool-warm vigor index (CWVI) test performed by TDA. This will give the best indication of the overall quality of the seed.

The CWVI is actually the combined percentage germination for the standard warm germination test (counted at 4 days) and the cool germination test. To obtain CWVI analysis, submit a 1-pound representative sample of acid delinted seed to the TDA Seed Laboratory. Currently, there is a charge of $21 per sample. Expect at least a 2-week turnaround time. A representative sample should be obtained from several bags of the same seed lot. Make sure to not combine lots or varieties. A separate sample should be sent for each variety and for each lot. Upon completion of the two tests (warm germination test counted at 4 days and the cool germination test), these results are added together to provide the CWVI.

After obtaining the CWVI test results, seed quality can be categorized into the following groups: "Excellent" = 160 or greater; "Good" = 140 – 159; "Fair" = 120 – 139; "Poor" = Less than 120. This information allows producers to make more informed decisions on planting time and planting rates of 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, the "Fair" category seed should be used mostly for late plantings or replanting, and the "Poor" category should not be planted.

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