

**SEED SELECTION: AN EXTENSION  
SPECIALIST'S PERSPECTIVE  
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**Abstract**

**Variety Selection**

It appears members on this panel will discuss not only seed quality but also considerations for variety selection. The selection of planting seed and variety is a very important decision. Growers will have the opportunity to make numerous production decisions multiple times during the season. Among these are three or four fertility decisions, four or five weed control decisions and many insect control decisions. The decision regarding what variety to plant will be made one time and from that point forward the grower will live with it. Great and careful consideration must be given to this important decision as it will impact all other decisions made.

When selecting varieties to plant, several important characteristics should be evaluated. These include: yield; yield stability over time; yield consistency over locations and soil types; maturity; value-added traits; quality; and other personal preferences. Consistent ability to produce acceptable yields must be a top consideration in variety selection

Numerous value-added traits are available and selection decisions involving these must be made on a farm-by-farm and region-by-region basis. The most commonly available value-added traits available are Bt, Roundup Ready, combined Bt and Roundup Ready and BXN (tolerance to Buctril herbicide). The purpose of this panel is not to discuss the value or adaptability of either of these traits but rather to discuss variety selection and seed selection in general. A grower should evaluate the potential of the variety to produce acceptable yields in his environment and then make decisions regarding whether a value-added trait is needed, economical or wanted. Then, the list of varieties with desired traits must be evaluated for performance. Growers should select and buy genetics and then select and buy technology--not the reverse.

When studying variety performance information, growers should recognize local information is always the best information to consider. It is good to look at distant information, as it will give indications of how a variety may perform over a wide range of environments. However, local information, from similar soil types, management and environment, is the greatest value. Sources of this information can be university variety trials, personal observation on your own farm and observations made on

neighboring farms. Gather as much information as possible and study it carefully before decisions are made. Also I suggest growers plant the bulk of their acreage (perhaps 75-80%) in proven performers, 10-15% in expanded acreage of varieties previously grown and showing promise and maybe 5-10% of the acreage in varieties unknown to them or are totally new.

**Seed Quality**

Growers must be reminded it all begins with the seed. A crop starts and ends with seed, and planting quality seed is an important factor in cotton production. However, it has been an ignored factor for many years. With the coming of transgenic technology, the cottonseed must now be considered as more than just an embryonic plant. The seed is being used as a delivery system for technology. In fact, perhaps we should begin talking about planting units rather than just seed.

Cottonseed are used to deliver embryonic plants, potential insect control, potential tolerance to selected herbicides and protection from numerous disease organisms. Some of these technologies are present on the outside of the seed coat and some are contained within the genome of the seed itself. These new technologies are generally reflected in the price of the planting seed and, indeed, quality has become a major focal point of the grower and the industry.

The cotton plant perhaps has the most complicated structure of any major row crop. Cotton is a deciduous perennial shrub, grown as an annual in an area outside its region of origin. Cotton has an indeterminate growth habit and sympodial fruiting branch that causes it to develop a four dimensional occupation of time and space. Due to this growth habit, open bolls are potentially exposed to the environment for very long periods of time. Because of these factors, consistent production of high quality planting seed is very involved and complicated. However, all things considered, the cotton seed industry generally does an excellent job producing, conditioning and delivering planting seed of acceptable quality and variety to the grower.

Everyone generally accepts that high quality seed: emerge quickly; emerge uniformly; grow off quickly; produce strong root systems; and contribute to good yields. Likewise some visual indicators of high quality planting seed are: clean and weed seed free; uniformly sized; very low percent mechanical damage or cracking; have good standard germination--generally above 80%; have good vigor--generally testing above 60% in a cool germination test; and are correctly labeled.

Without going into great detail let me tell you a standard germination test is not an indicator of the strength of a seed lot. The standard germination test for cotton is a very

forgiving test and about all a seed has to do to be counted as germinated is not rot or die before the test is over. The standard germination test is conducted at near optimum temperatures and near optimum moisture. The test can be extended up to 12 days if needed. A value of less than 80% in this test is very questionable.

Now, let me remind you all cottonseed sold in the U.S. is generally tagged 80% germination. This is an industry standard and done because of the rules of the trade. The contents of the bag must germinate within tolerance of the stated germination. If a 200-seed sample is used in the official test laboratory, the tolerance is 7%. Thus a bag of seed labeled 80% may germinate from 73% up and still be sold as 80% seed.

The industry is justified in doing this as cottonseed are living organisms and are subject to changes in germination in response to changing storage conditions. However, it is important growers know the actual germination of their seed to more accurately calibrate and set their precise planters. I recommend growers ask their seed suppliers for the actual germination of the seed lots they are sold or have an official sample pulled and a germination test run upon delivery (if time allows).

Prices of planting seed for the transgenic varieties have growers trying to cut seeding rates in an attempt to save money. Growers cannot accurately set their planters without knowing the actual germination of the seed lots in question.

The cool test, or vigor test, is another matter. The cool germination test for vigor is conducted at a critical temperature under very controlled conditions for a set seven-day period. Seedlings must reach a combined root-hypocotyl length of one and one half-inch to be counted. This test is a very good indicator of seed quality and test values over 60% are very acceptable. The cool test is not regulated by seed laws and is not stated on the seed tag. Growers should ask their seed source for this information for each seed lot. As with the standard germination test, if enough time is available, a test conducted closer to the actual planting date is always beneficial. The cool test values can help determine the order of planting for various seed lots as well as helping to calibrate the planters. Test values above 50% are acceptable but values above 60% are preferable.

Once again look for standard germination values above 80% and cool germination values of at least 60% or better. You will have to ask for the actual values for this quality test, as they are not stated on the bag. Year of production and blending history are also not stated on the bag but should be available upon your request. Blending and carrying over of cottonseed has been a long-standing practice in the cotton seed business. As long as quality levels are high and storage

conditions are controlled, there is nothing wrong with this practice. In fact there have been a few production seasons in which carry over seed were higher quality than current year production. As seeds age, storage conditions at the warehouse and on the farm are critical. Just like humans, as seed age, they are just simply more susceptible to adverse conditions, especially poor storage conditions. For most practical purposes, the results of a current cool test are really more important than the year of production.

I feel that in the cottonseed world the industry and the grower have certain responsibilities. These are only my opinions, but I feel the industry has the responsibility to:

1. provide a quality product that meets the growers' needs;
2. keep accurate records of all lots--from production to delivery;
3. label products accurately;
4. provide seed lot data to growers in a timely manner;
5. respond to grower inquiries promptly and professionally;
6. foster and maintain grower trust.

Likewise I feel the growers have certain responsibilities, to include:

1. take the initiative to learn product traits;
2. ask for and record lot numbers upon seed delivery;
3. keep accurate records of lot numbers by field;
4. protect seed integrity and quality after delivery;
5. use good judgement when planting (especially planting date and weather conditions);
6. notify seed industry representatives immediately if a problem is suspected;
7. be professional.

As previously stated, all things considered, the cottonseed industry generally does an excellent job producing, conditioning and delivering planting seed of acceptable quality. However, cotton growers must learn all they can about planting seed quality factors, measurements and expectations. Planting seed value has increased tremendously and growers must not take quality for granted as they adjust seeding rates to save cost.