

**SELECTING OF IMPROVED COTTON  
PLANTING SEED QUALITY**

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**Abstract**

In most cotton breeding programs, planting seed quality occupies a low priority due to the relative value of seed and lint, the great variation in seed, and the lack of a well-defined measure of seed quality. The objectives of this presentation are to review methods used to genetically improve cotton planting seed quality and to propose a new approach. The most common method used to improve cotton planting seed quality is simply to discard genotypes that do not produce good stands. This parameter confounds both seed and seedling quality, is the expression of multiple traits, and is highly variable. By separating seed and seedling quality, planting seed quality can be defined as the ability to maintain germination under harsh conditions and measured by resistance to seed deterioration. Selecting for germination after seed have been subjected to stress provides a direct method for improving planting seed quality. The Texas A&M University Multi-Adversity Resistance program does this and has improved resistance to seed deterioration by selecting for absence of mold and slow germination in a cold laboratory environment. Although this method has been successful, plating seed and transplanting selected seedlings is time consuming, and thus limits the number of genotypes that can be examined. Other stress methods include accelerated aging, methanol stress, and hot water stress. The approach now being used in my program includes 1) deteriorate seed for differential times in hot water (65C) then plant deteriorated seed directly to field, 2) apply usual selection techniques on plants in highest deterioration level having adequate plants, 3) harvest selected plants and plant seed to progeny rows, and 4) apply usual selection to progeny then check selected progeny for water imbibition and germination after hot water treatment.