MISSISSIPPI STATE UNIVERSITY ON-FARM VARIETY TRIALS 2014

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Abstract

The decision making process regarding variety selection is often difficult and, in many cases, leaves growers wondering for the remainder of the growing season whether they made the right variety selection decisions. Further complicating this process has been the rapid introduction of new varieties and the passing of "older" varieties over the past several years. Historically, a premier variety would remain in the marketplace for a long period of time. However, a variety that performs well today typically has a life span of four to six years. One that does not perform well will likely remain on the market for less than three years. In addition, the historical standard for variety testing information was to have two to three years of data prior to release of any given variety. Today, one to two years of variety testing information on a "broad scale" is common prior to a new variety being released. Therefore, greater demand has been placed upon testing a variety in as many environments as possible as a substitute for multiple years of data. In nearly all cases, variety testing prior to release is conducted by private industry through a series of testing methods and through University Official Variety Trial (OVT) programs. OVT data is typically available for one year prior to release of a given variety.

Our on-farm testing program is not designed to replace or compete with small-plot OVT testing programs, rather it is designed to complement the data that is provided by OVT programs. The use of large plot variety trial data in conjunction with small plot OVT data provides a tremendous resource with respect to variety performance to the growers of Mississippi.

The on-farm testing program at Mississippi State University is designed to test varieties in as many environments as possible. Limiting the number of entries allows for efficient planting and harvest operations and requires a minimum amount of time from cooperating growers. The number of variety entries each given company is given is dependent upon market share. In addition, two at-large entries are given to smaller companies in order to provide equal opportunity to as many seed providers as possible. Our on-farm variety tests are usually planted in 8- or 12-row sets utilizing planting equipment provided by each respective grower. In some cases, 4- or 6-row sets are used depending on site characteristics and grower preference. In addition, two replications of each variety are planted and harvested in most locations. Plot lengths ranged from 600 to 3600 feet in 2014 depending on the characteristics of the field the trial was conducted in. Seed treatments are at the discretion of the company providing seed. A premium package including insecticide, fungicide, and nematacide seed treatments was provided for each variety. In-season management is at the discretion of the grower and each is encouraged to manage the plot area as he/she would manage any given field on their farm. Yield trials were conducted at a total of 17 locations. Nine locations were located in the Delta and eight were in the hills. Eight of nine Delta locations were irrigated whereas seven of eight Hill locations were dryland. Field sites were chosen based upon grower preference and required elements to conduct a yield trial.

Each replication for each variety was individually harvested using standard harvest equipment. Harvest weights were collected using a boll buggy or trailer modified to display the weight of seed cotton contained therein. Prior to all harvest operations, each boll buggy or trailer was calibrated by Master Scale in Greenwood, MS to ensure that correct harvest weights are collected. An 8- to 10-pound seed cotton sample was collected for each variety tested. In order to reduce ginning time, one-half of the sample was collected from replication number one and one-half was collected from replication number two. The entire 8- to 10-pound sample was collected from a single replication in locations that only have one replication per variety. Seed cotton was ginned at the University of Missouri Delta Research and Extension Center near Portageville, MO. Ginning equipment at the University of Missouri consists of a 21-saw Continental Eagle gin equipped with a stick machine, incline cleaners, two lint cleaners, and a condenser.

Fiber quality for each ginned sample was determined using a High Volume Instrument (HVI) located at the Texas Tech Fiber and Biopolymer Research Institute.

Pooled over 17 trials, NG 1511 B2RF, ST 4946GLB2, DP 1311 B2RF, DP 1133 B2RF, and PHY 333 WRF yielded 1279 to 1320 pounds of lint per acre. Average turnout for all varieties was 41.7%. Micronaire, staple, strength, uniformity, and leaf grades averaged 4.6, 1.15, 30.4, 83.0, and 5.2, respectively. Pooled over nine irrigated locations ST 4946GLB2 and PHY 333 WRF yielded 1389 and 1447 pounds of lint per acre, respectively. PHY 339 WRF, ST 5289GLT, ST 4747GLT, DG 2570 B2RF, DP 1133 B2RF, NG 1511 B2RF, DP 1311 B2RF, and DP 1321 B2RF yielded 1316 to 1370 pounds of lint per acre. Average turnout for all varieties was 41.4%. Micronaire, staple, strength, uniformity, and leaf grades averaged 4.5, 1.17, 31.1, 83.3, and 5.1, respectively. Pooled over eight dryland locations ST 4946GLB2, ST 4747GLT, DG 2570 B2RF, PHY 333 WRF, NG 1511 B2RF, DP 1133 B2RF, DP 1133 B2RF yielded 1225 to 1289 pounds of lint per acre. Average turnout for all varieties was 41.8%. Micronaire, staple, strength, uniformity, and leaf grades averaged 4.6, 1.14, 29.5, 82.7, and 5.2, respectively.