



IN THE UA cotton laboratory, Mrs. Doris Waterworth is preparing to run a cotton sample on the fibrograph to measure length of the sample. The instrument at her right, a cylinder containing cotton, is the fibro-sampler.

Visual vs. Fibrograph Determination of Cotton Staple Length

Robert E. Briggs

Cotton is classed to determine grade and staple length. Classification provides part of the basis for price-quality differences in cotton marketing. This service is performed by the Agricultural Marketing Service of the U. S. Department of Agriculture at classing offices across the cotton belt. Most Arizona cotton is classed at the Phoenix classing office.

Grade and staple length are determined in classing offices by visual inspection. In this report we are primarily interested in the staple length of cotton. Traditionally, the classer has determined staple length by making a "pull" from a sample. By a process of pulling and discarding, he parallels a typical portion of the fibers. The length to be assigned is determined by judging the length of this "pull" by eye. One "pull" is made for each of the two samples obtained from each bale.

Has Comparison At Hand

The staple recorded is from the side

Dr. Briggs is a member of the Agronomy Department.

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with the lowest measured staple. When the classer is in doubt, he can pull a sample from an official standard at his disposal to compare with his sample. Occasionally the "pull" is measured with a ruler. A classer must have sufficient training in this technique so that he can repeat himself consistently. It is realized that human judgment and error may be a factor with this stapling method.

Instruments are available to determine fiber length. The principal instrument used for length measurement is the fibrograph. This is a photoelectric instrument which scans a fiber sample and traces a curve from which fiber lengths are obtained. The use of instruments in determining fiber length is slower than hand stapling but is more accurate. Inaccuracies may result from human variations with use of a fibrograph. However, with use of check samples, such variations can be adjusted and reduced to a minimum.

Are Visual Tests Fair?

A number of Arizona cotton growers were concerned about the accuracy of the classers' method of determining staple. They questioned if the classers' method was giving a fair staple measurement compared with length as determined by the fibrograph.

For that reason a study was made to compare visual versus fibrograph determinations of staple length. Eighteen gins in the Phoenix classing office area cooperated in this study during the 1960-61 ginning season. Samples from 4,733 bales were collected. The samples were, so far as possible, obtained the same way as samples submitted to the classing office. Each sample consisted of two parts taken from opposite sides of the bale. Two cooperating gins had automatic samplers so only one composite sample was collected from these gins.

All samples were run in the University of Arizona cotton laboratory at Tucson which is controlled at a temperature of 70° F. and 65% relative humidity, these being standard conditions for cotton fiber laboratories. To reduce human variation as much as possible, one operator was used to test all samples. To further reduce error, a fibro-sampler, an automatic comber, was used. This instrument automatically prepares a sample of cotton on a specimen holder (comb) for use in the fibrograph.

A servo-fibrograph was used in this study. One length determination was made for each of the two samples obtained from each bale. Two determinations were made from the bale samples collected with automatic samplers. One reading obtained from the fibrograph, the upper-half-mean length, is expressed in inches and corresponds closely to staple length determined by classers. Information regarding the variety and the classers' staple were furnished by the cooperating gins for each sample tested.

Classer's Staples Longer

The average of the two fibrograph readings was used to make comparisons with the classers' staple. Combining all 4,733 samples, the average classer's staple given was 1.05 inches, or 1 1/32 to 1 1/16 inches. Average actual fibrograph reading was 1.01 inches, which is equivalent to one inch to 1 1/32 inches. Thus, the average classer's staple was equivalent to 1/32 of an inch longer than the average fibrograph reading.

Our table includes the average classer's staple in inches, average fibrograph read-

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Pepper and Jim Go to 4H School



Yuma County Agricultural Agents have discovered a new fount of 4H interest — dog obedience training. The 4H dog obedience school is a project for boys and girls from 10 to 20. Classes are held once a week, sponsored by the Yuma Kennel Club.

The course is taught by a professional dog trainer, explains County Agent Dick Quinton, who assists in the program from the county Extension office. The course, designed to teach dogs to do the right things and unlearn bad habits, has been in effect the past two years.

"From this experience we have found that the 4H club boy or girl will learn more than the dog," says Dick.

The accompanying photo shows Dick's son, Jim Quinton, with "Pepper," the registered collie which is part of his 4H project. Jim, who was pictured with his alert dog in *The Yuma Sun* recently, took his collie through the dog obedience training classes sponsored by the Yuma Kennel Club.

The obedience school, taught by Paul Steele of El Centro, costs \$10 for adults, \$5 for 4H members.

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ing, variety and number of samples tested for each variety.

Although the average classer's staple between varieties only ranged from a low of 1.04 to a high of 1.07, the average fibrograph spread was a low of .95 inches for Stoneville 7 to 1.05 for Acala 1517-C or a spread of .10 inches which is equivalent to 3/32 inches between these varieties. The varieties Acala 44, Deltapine, Acala 4-42 and Acala 44-WR were four known varieties with a large number of samples tested. It is interesting to note that the classers' staple for the three Acala varieties was in the range of 1/32 inch longer than the actual fibrograph reading. On the other hand, the classers' staple for Deltapine was equivalent to 1/16 inch longer than the actual fibrograph reading.

Official U. S. standard samples were

run periodically to check performance of the laboratory fibrograph. Check readings were in close agreement with the length of the standard, so it may be assumed that the fibrograph figures are valid.

| Variety | Average Classer's Staple (Converted to inches) | Average Fibrograph U. H. M. (inches) | Samples Tested |
|--------------|--|--------------------------------------|----------------|
| Acala 44 | 1.05 | 1.01 | 1941 |
| Deltapine* | 1.05 | .98 | 889 |
| Acala 4-42 | 1.06 | 1.02 | 723 |
| Acala 44-WR | 1.06 | 1.03 | 458 |
| Acala 124-68 | 1.05 | 1.03 | 122 |
| Stoneville 7 | 1.04 | .95 | 5 |
| Acala† | 1.04 | .99 | 507 |
| Acala 33 | 1.06 | 1.04 | 5 |
| Acala 1517-C | 1.07 | 1.05 | 83 |

*Probably mostly Deltapine Smooth Leaf.

†Submitted as Acala varieties but the actual variety was not known.

Deltapine Proves Top Cotton Yielder

As cotton farmers may have suspected, Deltapine cotton performed well in all variety tests and demonstrations conducted during the 1961 season in Arizona.

Deltapine was the top yielding variety in most of the tests, according to conclusions drawn from a preliminary summary of yield data. Tests were conducted cooperatively by the University of Arizona College of Agriculture and the Arizona Cotton Planting Seed Distributors.

In tests where Deltapine was not the top yielder, it was close behind the leader.

"It was the opinion of the Arizona co-operators that Deltapine responds differently to various cultural practices than do the Acala cottons," Dr. Howard Ray, University of Arizona cotton specialist, said after studying the data.

Cotton variety tests of the Arizona Cotton Planting Seed Distributors were in Yuma, Pima, Pinal and Maricopa counties. In addition, UA county agents had variety demonstrations in Mohave, Santa Cruz, Cochise, Graham, and Greenlee counties.

Brechan Honored By County Agent Group

William B. Brechan, University of Arizona county agent for Coconino County, was awarded a plaque and certificate for outstanding service at the recent annual Extension Service conference at the University of Arizona.

Presentation was made at Tucson, but the award was from the National Agricultural County Agents Association.

Brechan has been a U of A county agent for the last 15 years, three years as an assistant agent in Pinal County doing 4-H club work, and since 1949 as an agent at Flagstaff.