THE VALUE OF SINGLE LOCK SAMPLES AS A MEASURE OF
SEED PURITY IN COTTON

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Some cotton breeders make combings of cotton on a single seed from individual plants in order to study variability of staple length from plant to plant within any given variety or strain of cotton. A method used by some consists of picking 50 or more locks from 50 plants, combing out the fibers on the middle seed of each lock at right angles to its longitudinal axis (Fig. 1), and measuring the length. At present there does not appear to be much data on controlled tests to show the reliability of this method in measuring variation. O’Kelly and Hull found that the mean combed staple length of the parent plants in cotton varieties showed correlation with the progeny length. Within the average commercial variety one can find a range of ½ inch or more from plant to plant in combed staple length on seeds from individual plants. Are such variations due to the genotypic constitution of the variety, or are they simple fluctuations on the plant caused by environmental conditions?

The purpose of this study is to show to what extent combed staple length as measured on a single seed of a parent is inherited or carried over to the progeny plants, and to give some measure of the value of the common method of studying length variation in cotton varieties.

MATERIALS AND METHODS

Material for study was obtained from the 1931 crop of the following American Upland strains (Gossypium hirsutum L.): Strain A, registered seed; Strain A, mixed seed; Strain B, certified seed; and Strain C, which appeared to be unstable. A brief history of each of the four strains is given below.

Strain A, registered seed in 1931.—Grown at this Station for 6 years. Seed were planted at Youngsville, N. C. in 1931, adjoining the mixed strain of Strain A. Blooms on individual plants were dated and tagged during the summer, and random bolls were saved from the dated material.

Strain A, mixed seed.—Grown in Union County, N. C., for 4 years, 1927-30, inclusive. No special precautions were taken to prevent mixing at gin. Seed were planted at Youngsville, N. C., in 1931, adjoining the registered seed of the same strain. Blooms were dated and tagged during the summer, and random bolls were saved from the dated material.

Strain B, grown from certified seed.—Fifty locks were picked at random from 50 plants in a grower’s field in 1931 and saved for study.

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