

QUANTITATIVE DETERMINATION OF LINT ON COTTON SEED

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Since the end of the War and the subsequent decrease in the manufacture of nitrocellulose the determination of lint on cotton seed has lost much of its importance. It is of value, however, in showing the amount of lint available on seed from different localities; in making a true comparison of the efficiency of different mills; and in showing the amount of fiber available after delinting.

Present methods of determining lint are troublesome and inaccurate, with an incalculable personal equation. The method given below is simple and quick; duplicate determinations agree within the limits allowed by the inequality of the material; and results are accurately indicative of actual mill yields.

The writer acknowledges the credit due to John Malowan, whose method of treating seed with Hydrochloric Acid for oil determination suggested this method for lint.

The Method

From the well-mixed and cleaned sample of cotton seed weigh approximately 10.2 grams, eliminating all broken and immature seed. Put 8 to 10 drops of 40 per cent Hydrochloric Acid on the bottom of a small beaker. (A 75 c.c. assay beaker is preferred.) Place the sample loosely in the beaker, protecting it from direct contact with the acid by a disc of monel metal screen. Cover the beaker with a watch glass and heat for ten minutes. This may be done in an oven at 110° C. or on a hot plate with a surface temperature of 140° C. Remove the cover and heat for an additional ten minutes; then spread the sample on a clean surface to cool. Weigh to the closest centigram and rub in a pocket of cloth with a rotary motion to remove the hydrocellulose. Dump on a sieve to clean (a popcorn shaker is satisfactory) and reweigh. The loss in weight is lint. In rubbing the seed small particles of hull are removed with the lint, giving high results. To determine this blank, treat a sample of bald seed as for lint. Subtract the percentage loss from all lint determinations. A large number of analyses has established the blank as 0.6 per cent. Three determinations of lint should be made on each sample and the average reported, as 30 grams of cotton seed is required for a representative sample.

A comparison of results by this method with actual lint cuts is given below. When the lint on seed before and after delinting has been determined the amount of lint cut is calculated as follows:

$$100 - (\% \text{ Lint on Original} - \% \text{ Lint on Delinted}) = \times. \times (\%$$

Lint on Delinted) = % Lint on Delinted, Original Basis. % Lint on Original — % Lint on Delinted, Original Basis = % Lint Cut.

No. 1. Mill Cut 36 Lbs. per Ton.			
% Lint on Original	% Lint on Delinted	% Lint Cut	Lbs. per Ton By Analysis
10.9	9.4		
10.7	9.0		
10.5	8.7		
Avg. <u>10.7</u>	<u>9.0</u>	1.85	37.

No. 2. Mill Cut 78 Lbs. per Ton.			
10.6	6.6		
11.0	7.0		
11.0	7.2		
Avg. <u>10.9</u>	<u>6.9</u>	4.28	85.6

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