

EFFECT OF FIBER ENTANGLEMENTS ON AFIS READINGS

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Abstract

The goal was to study the effects of fiber entanglement on AFIS readings. The AFIS fiber individualizer settings on the Old AFIS and the AFIS PRO are not exactly identical. One may be more aggressive than the other, causing more fiber entanglement to translate into more fiber breakage.

Three types of samples were selected for this study:

- a. DII slivers.
- b. Commercial cotton bales.
- c. Small breeder samples.

The samples were tested on both the Old AFIS and the AFIS PRO. Table 1 shows the average readings obtained on both instruments for the 3 types of samples. We can assume that there is minimal fiber entanglement in DII slivers, more in commercial bale samples (some combing action from the lint cleaners) and much more in breeder samples. For the short fiber content by weight, there is only 0.6% difference between the 2 instruments for the DII slivers while there is 4.4% difference for the breeder samples. Obviously, the difference between the 2 instruments increases with higher fiber entanglement (Table 2). This finding, if confirmed, may have an impact on AFIS testing for cotton breeders. Sample preparation prior to testing may be necessary in order to eliminate most of the fiber entanglements.

A complete analysis of the results will be published in the near future.

Table 1. Average AFIS readings for 3 sample types and 2 instruments.

	DII slivers		Raw cotton from bales		Breeder samples	
	Old AFIS	AFIS PRO	Old AFIS	AFIS PRO	Old AFIS	AFIS PRO
L(n)	0.738	0.744	0.697	0.723	0.677	0.771
L(n) CV%	48.2	47.0	53.2	51.9	58.0	49.8
SFC(n)	28.3	26.9	32.4	30.0	35.3	25.3
L(w)	0.909	0.907	0.894	0.915	0.904	0.963
L(w) CV%	36.9	36.0	36.9	35.7	37.4	33.1
SFC(w)	11.9	11.3	12.6	11.2	12.5	8.1
UQL	1.116	1.110	1.103	1.120	1.118	1.156

Table 2. Average differences between the 2 instruments expressed as a percent of the Old AFIS ((AFIS PRO – Old AFIS)/Old AFIS *100).

	DII slivers	Raw cotton from bales	Breeder samples
L(n)	0.8	3.8	14.0
L(n) CV%	-2.5	-2.4	-14.0
SFC(n)	-4.9	-7.4	-28.2
L(w)	-0.2	2.3	6.6
L(w) CV%	-2.5	-3.2	-11.7
SFC(w)	-5.1	-10.5	-35.6
UQL	-0.5	1.5	3.4