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1930 Shirley Institute Foster

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Anderson Foster가

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1. 2 , 14's 100's

· 1~6.5hank

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4~50

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2. 가

3

60's

80's

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3.

13

20's~100's

2 ,

1

,

SITRA

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1

top-arm drafting

Uster

80 ,

100

U% $(1,253 \times U\%)^2$

$(U\%)^2$

Anderson

Foster

[1]

가

가

가

가

$$V^2 - V_r^2 = A(D - 1) \dots \dots \dots (1)$$

, $V^2 - V_r^2$

, A

D

A

. < 1 >.

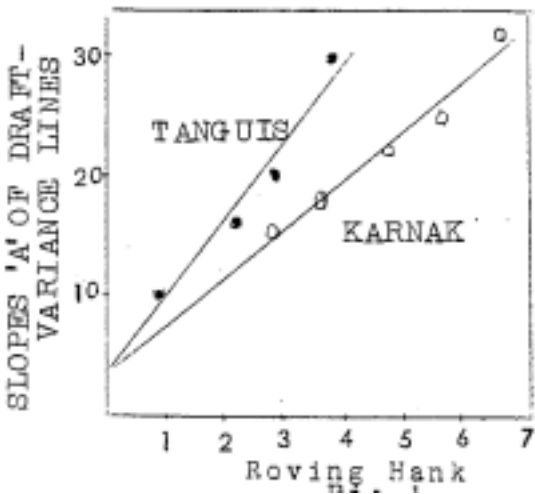
Anderson Foster . a

가 .

$$V^2 - V_r^2 = (QC + a)(D - 1) \dots\dots\dots (2)$$

, Q < 1> , C .

< 1> A = QC + a (2) (1)



< 1> Relation between the slope of the draft-variance line and the roving hank.

a 가 , 가 .

가 가 가

. a 가

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a 가

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가

가

Q

가

, Anderson Forster A 2 a Q

.A 가

.A Q

(2) Q

13 20's~100's

Q a (2) $(V^2 - V_r^2)/(D - 1)$

Y , 13

$Y = Q_i C + a$ (i = 1, 2,, 13)

$$S = \sum_{i=1}^{13} (Y - Q_i C - a)^2$$

Q_i a 0 Q_i a가

Q_i

1.5 9.5

a

3.62

Q_i

. < 1> < 2>

a

< 1> Values of a for Different Cottons

Cotton	a	Cotton	a
Menoufi-A	3.54	9030 G	3.54
Supima	3.79	CO4	3.65
Menoufi-B	3.80	Cambodia-A	3.97
Karnak	3.64	Cambodia-B	3.31
Sudan	3.54	L-147	3.81
ARBP-52	3.78	Kalyan	3.86
		H-14	3.49

< 2> Values of a for Different Conuts

Cotton Count	20s	30s	40s	60s	80s	100s
Linear Density (tex)	29.6	19.6	14.8	9.8	7.4	5.9
a	3.41	3.87	3.86	3.41	3.25	3.76

(2)

가

33%

0.985

a

가

, Q 가

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Foster 가

, Balasubramaniam [2] 가 .

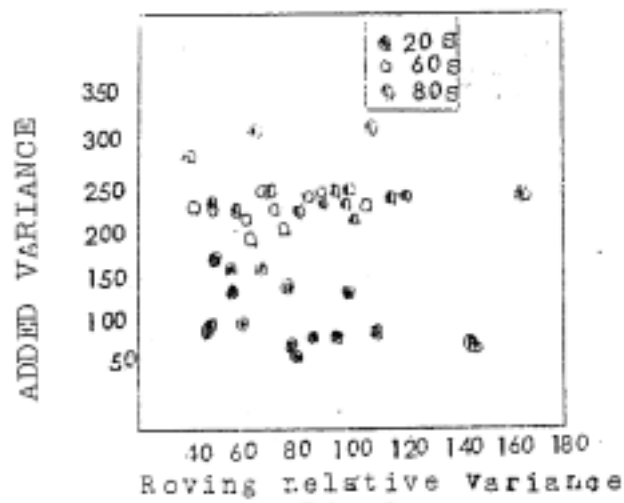
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. 41 , 20's 80's 16 , 60's 9

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< 2> 가 가

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< 2> Effect of input irregularity on added variance

, 가 가

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. Q

Q 가

. Q

$$Q = K \cdot \frac{FP}{\ell_{\text{cur}}} \dots\dots\dots (3)$$

. ℓ 2.5% span length(mm) U Uniformity ratio, F fineness($\mu\text{g}/\text{in}$)/maturity Coefficient . k, p, q r .
(3) ,

$$Q = 47.3 \cdot \frac{F^{2.06}}{\ell_{2.15_U}^{1.92}} \dots\dots\dots (4)$$

가 . (4) 2 가 , 2 가
(4)

$$Q = 29.4 \left(\frac{F}{L} \right)^2 \dots\dots\dots (5)$$

. $L = \ell \cdot U$, 50% Span Length .

$$(5) \quad Q < 3 >$$

, 0.975 .

$$(4) \quad \text{가 } 0.976 \text{ 가} , (5)$$

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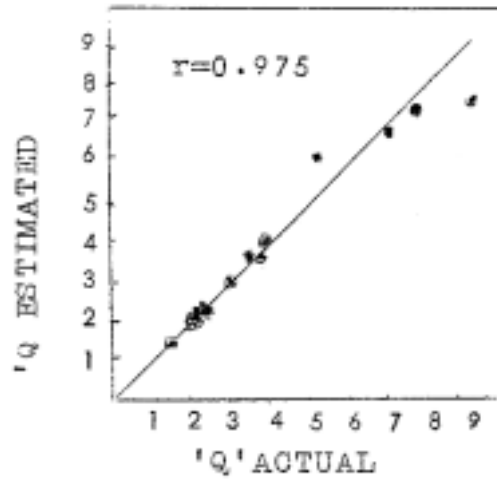
$$(2) \quad (5)$$

$$V^2 = \{29.4 \left(\frac{F}{L} \right)^2 C + 3.62\} (D - 1) + V_r^2 \dots\dots\dots (6)$$

.

$$U\% \quad (6) \quad \text{가 } 0.967$$

. 가 가 F/L



< 3> Agreement between the estimated and actual values of Q

60% , 25% ,
 15% .
 U% 50% Span Length double logarithmic scale
 0.92 . U% “ / ”
 0.80 . 50% Span Length가
 . β
 0.67, 0.37 .
 72% 50% span length , 22%
 / .

. Anderson Foster

Anderson Foster가

$$V^2 = 9.4C(D - 1.43) + 0.73V_r^2 \dots\dots\dots (7)$$

(6) . 가 (7) 3.62 가
. (7) 2
. 2 , D
. .
가 . ,
(7) (D - 1.43) (6) (D - 1) . ,
. (7) 0.73V_r²가 .
가 가 .
, . (6)
가

.
. .
U% U%
. ,
.
. <

3> .

가 . R 20s 33%, 40's 48%, 60's

21%

가
가
가

< 3> Irregularity Index and Spinning Performance

Cotton	Irregularity Index			Spinning Performance		
	20 s (2.6 tex)	40 s (14.8 tex)	60 s (9.8 tex)	20 s (2.6 tex)	40 s (14.8 tex)	60 s (9.8 tex)
Menoufi-A	87	85	94	96	96	101
Supima	83	87	92	93	105	99
Menoufi-B	88	84	91	102	103	101
Karnak	97	98	98	102	105	100
Sudan	87	89	96	96	99	99
ARBP 52	104	102	112	98	99	100
9030 G	97	95	100	96	99	98
004	108	106	110	100	103	100
Cambodia-A	105	107	108	103	102	96
Cambodia-B	110	108	-	96	97	-
L 147	104	106	-	100	97	-
Kalyan	114	-	-	100	-	-
H 14	116	132	-	101	109	-

* As percentage of the average of each count.

(6)

(6)

가

U% (6)

< 3>

100 가

가 .

$a = 3.62$ 가 .

$a = 3.5$.

$U\%$ ($a = 3.5$) a

3.5 . SITRA

a 0.3 1.0 .

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가 0.98

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가

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$(F/L)^2$ (F) 50% Span Length(L)

$(r = 0.97)$.

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