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(1) -

1.

ITMF(International Textile Manufactures Federation)

. 1989

2001

22%

2001 가 18%, 1991 가 27% .

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. ()

가 가

. 가 (cotton whitefly)

Bemisia tabaci(Gennadius) (cotton aphid) *Aphis gossypii*(Glover) .

가 가

(sap-sucking) .

.

.

. Hendrix

가

(Phloem)

. melezitose

trehalulose

. Trehalulose Melezitose
 Melezitose Trehalulose가 Trehalulose
 가 가 .
 .
 glucose fructose sucrose
 .
 가 .
 가 .
 가 .
 () ()
 .
 .
 Trehalulose (48) (1
 3) . Trehalulose가 가
 .
 가 (H2SD)
 가 .
 53 . 40
 . 34
 . Trehalulose가 (whitefly) 가

() 40

가 Thermo-mechanical

H2SD

2.

TABLE I. HVI results on twelve contaminated bales and one uncontaminated module.						
Bale ID	UHML (mm)	UI (%)	Strength (cN/tex)	Microaire	Reflectance (%)	Yellowness
2	28.7	82.9	30.2	4.51	75.5	10.7
3	29.5	82.7	29.7	4.63	76.9	10.5
4	29.2	84.3	29.9	4.88	77.5	10.2
5	26.9	81.9	24.3	5.35	72.6	9.7
6	29.0	82.8	31.9	4.18	77.1	10.4
7	26.7	82.0	26.9	4.39	72.4	8.7
8	27.4	80.6	25.1	5.49	70.1	8.3
9	28.4	83.6	30.1	4.61	76.9	10.7
10	29.0	83.1	29.4	4.55	77.1	10.5
11	28.2	81.3	29.6	4.44	77.1	10.0
12	27.2	79.9	24.6	5.30	70.8	8.6
13	26.9	80.0	24.9	5.39	69.1	8.5
Average	28.1	82.1	28.0	4.81	74.4	9.7
Minimum	26.7	79.9	24.3	4.18	69.1	8.3
Maximum	29.5	84.3	31.9	5.49	77.5	10.7
1*	27.7	81.7	28.1	4.88	75.9	10.6

* Corresponds to the non-sticky module.

H2SD

12

Instrument), H2SD HPLC(High-Performance Liquid Chromatography)

< 1> < 2> . HVI

4 10

. H2SD HPLC 3 .

TABLE II. HPLC and H2SD results on twelve contaminated bales and one uncontaminated module.

Bale ID	Glucose (a)	Fructose (a)	Trehalose (a)	Sucrose (a)	Melezirose (a)	Total Sugars (b)	H2SD
2	45.3	32.9	1.7	6.8	12.8	0.134	2.0
3	47.6	32.5	1.7	4.3	13.9	0.231	1.9
4	42.9	15.2	2.7	8.9	29.5	0.112	2.3
5	18.4	19.0	30.1	0.6	31.9	0.163	12.6
6	25.6	36.5	15.5	2.3	19.7	0.386	18.9
7	44.4	33.1	3.0	0.8	18.8	0.133	14.5
8	18.8	15.3	39.8	0.0	26.1	0.176	22.4
9	19.2	27.0	18.1	7.2	28.7	0.792	38.2
10	18.4	27.9	18.3	8.1	27.1	0.705	42.8
11	42.8	29.3	6.5	6.9	14.5	0.276	41.5
12	13.6	22.8	34.7	0.2	28.9	0.536	64.7
13	17.6	23.3	34.8	0.0	24.2	0.541	69.9
Average	29.5	26.2	17.2	3.8	23.0	0.357	27.6
Minimum	13.6	15.2	1.7	0.0	12.8	0.112	1.9
Maximum	47.6	36.5	39.8	8.9	31.9	0.792	69.9
1*	44.4	23.6	3.2	10.6	18.1	0.216	2.5

* Corresponds to the non-sticky module. (a) Expressed in percent of total sugars. (b) Expressed in percent of the fiber weight.

< 1> . ,

, , ,

. Ne 30(19.68 tex) 14

72 . Ne 22(26.84 tex)

10 20 .

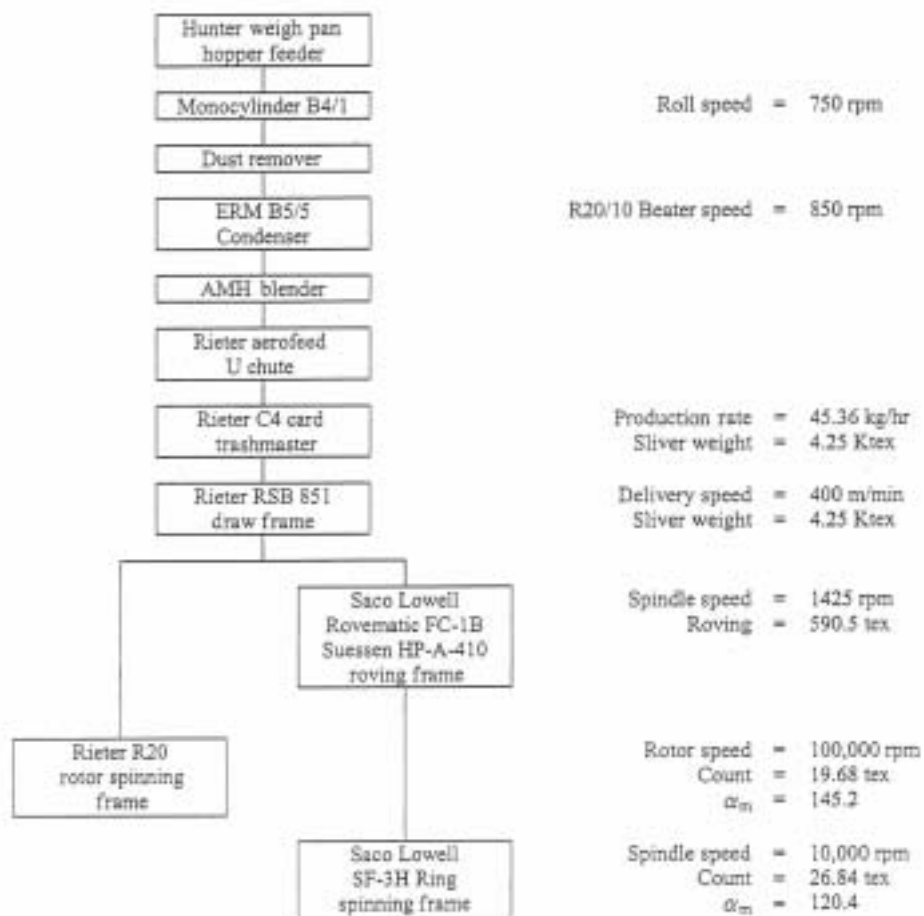


FIGURE 1. Outline of the mechanical process for the spinning trials.

30 lb

가

100 lb

50%
17
4 50%
4 75% 3
87.5% 2
93.75%

TABLE III. HPLC and H2SD results on the card slivers of seventeen cotton mixes. G = Glucose, F = Fructose, T = Trehalose, S = Sucrose, Me = Melenitose.

Mix ID	Bale ID	Non-sticky Module %	G (a)	F (a)	T (a)	S (a)	Me (a)	Total Sugars (b)	H2SD† Meas.	H2SD‡ calc.
A	1	100	42.5	21.7	3.4	14.5	17.9	0.207	3.2	2.5
B	2	0	44.9	33.5	2.4	5.7	13.1	0.245	2.0	2
C	3	0	49.1	33.6	1.8	5.0	10.5	0.220	2.3	1.9
D	4	0	40.7	10.6	1.8	5.3	40.7	0.113	3.2	2.3
E	5	50	29.8	20.8	14.3	9.5	25.6	0.168	8.3	7.6
F	5	75	36.3	21.2	9.8	11.9	20.7	0.193	6.5	5.0
G	6	50	30.0	32.9	10.7	7.2	19.2	0.307	8.9	10.7
H	6	75	36.1	29.1	4.1	10.7	19.7	0.244	4.5	6.6
I	7	50	42.5	28.1	1.3	5.6	21.9	0.160	10.2	8.5
J	7	75	41.5	24.5	2.1	11.2	20.7	0.188	4.8	5.5
K	8	50	27.7	17.8	16.8	6.9	30.7	0.202	15.1	12.5
L	8	75	34.0	19.8	9.9	10.8	25.5	0.212	6.0	7.5
M	9	87.5	29.8	23.8	9.8	14.0	22.5	0.315	4.7	7.0
N	10	87.5	34.2	24.1	7.5	14.3	19.5	0.266	5.3	7.5
O	11	87.5	42.6	23.8	2.5	13.4	17.8	0.202	15.7	7.4
P	12	93.75	35.0	21.0	9.7	12.1	21.8	0.257	9.3	6.4
Q	13	93.75	40.3	23.6	6.9	11.2	18.5	0.233	9	6.7
Average			37.5	24.1	6.8	10.0	21.5	0.219	7.0	6.3
Minimum			27.7	10.6	1.3	5.0	10.5	0.113	2.0	1.9
Maximum			49.1	33.6	16.8	14.5	40.7	0.315	15.7	12.5

† H2SD readings measured on card slivers. ‡ H2SD calculated from the raw material. (a) Expressed in percent of total sugars. (b) Expressed in percent of the fiber weight.

H2SD(3) HPLC(3)

UT3(400m/min, 2 ,

10), Tensorapid(200) Saco-Lowell(10)

Saco-Lowell SF-3H

Rieter R20

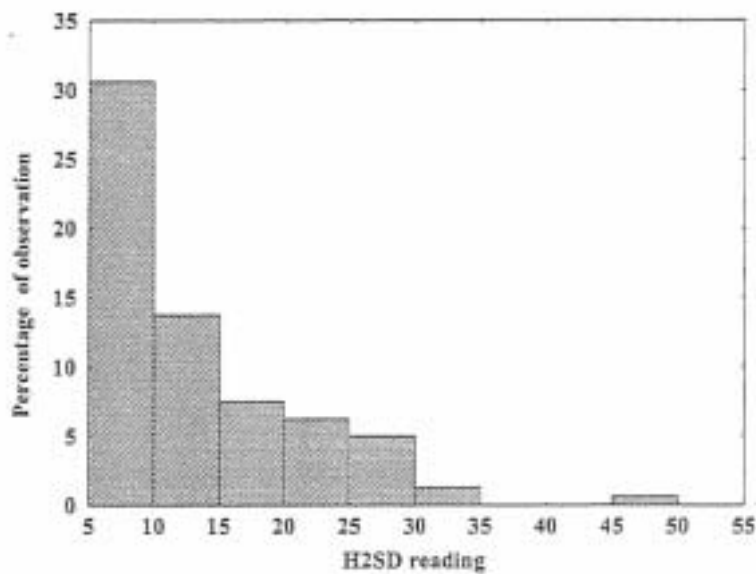


FIGURE 2. H2SD readings on 160 samples for card tests.

TABLE IV. HPLC on 160 samples for spinning trials.

	% of the fiber weight			% of the total sugars		
	Average	Mini	Maxi	Average	Mini	Maxi
Glucose	0.081	0.030	0.168	63.1	37.8	83.3
Fructose	0.031	0.004	0.101	19.9	7.5	33.0
Trehalulose	0.002	0.000	0.006	1.7	0.1	11.1
Sucrose	0.008	0.000	0.046	5.2	0.0	17.4
Melezitose	0.013	0.002	0.036	10.2	2.9	24.2
Total	0.135	0.036	0.357			

Trehalulose

가 160

. 160

H2SD

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2>

HPLC

< 4>

. 160

50 lb(22.7kg)

8,000 lb(160 × 50 lb)

Rieter C4

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100 lb(45.4kg)

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