TEXAS TECH UNIVERSITY
International Textile Center

Final Report

Effect of Alternative Crop Termination Treatments on Fiber and Yarn Quality

Agreement No.: 05-607 TX

January 2007

E. Hequet

Randy Boman

John Gannaway

Alan Brashears,

Project Summary

The widespread production on the Texas Plains of varieties exhibiting longer, finer, and stronger fibers raises the possibility of utilizing these fibers in ring spinning applications. This, in turn, has renewed interest in the impacts of crop termination practices and harvest technologies (i.e., stripper versus picker). The experiment conducted this year consisted of three varieties (PM 2326 RR, FM 960 RR and FM 989 RR), two termination treatments ((1) Single high-rate of paraquat applied when bolls are 80% open, and Ethephon/defoliant applied when bolls were 60% open, followed by sequential applications of paraquat), and two harvest treatments (Picker, and Stripper with field cleaner) in a randomized, complete block design.

The lint turnout is higher with the more expensive termination method when the cotton is stripper harvested while there is no difference between termination methods when the cotton is machine picked. The FM varieties have higher lint turnout than the PM 2326 in all circumstances. As expected, machine picked cotton picked has a much higher turnout that stripped cotton (high trash content). On the other hand, due to field losses, the yield (lint/acre) is better with the stripper harvested cotton. For the more expensive termination method, the loan value is better for the machine picked cotton while it is not for the stripper harvested cotton. These observations translate into a better net value of the crop per acre for the stripper harvested cotton.

For the fiber quality aspects, as observed last year, this evaluation of impact of termination and harvest treatments provided some interesting results. Chief among these is that the 'traditional' variety, the Paymaster 2326RR, performed better in ring spinning than did the two newer varieties FiberMax 960RR and 989RR. Yet the PM 2326RR is perceived by the market to provide a fiber that works well for rotor-spun yarns, but to be a bit short-stapled to work well for ring-spun yarns. Indeed, it is not that the PM 2326RR worked extremely well for the ring spinning. The point is that it worked somewhat better than the other varieties, which are long-stapled enough to make them candidates for ring spinning. The primary explanation for this is that the PM 2326RR had the superior length distribution. The quality of the ring spun yarn produced from picker harvested cottons is better than the one of stripper harvested cottons (yarn uniformity parameters, hairiness, and white specks).

The results were quite different for rotor spinning, which is known to be 'tolerant' of short fibers. The FiberMax varieties gave rotor-spun yarns that were better than those from PM 2326RR in every yarn property except elongation. Except for yarn hairiness, it seems that there is no advantage to picker harvested cottons for rotor spun yarn quality.

Introduction

The widespread production on the Texas Plains of varieties exhibiting longer, finer, and stronger fibers raises the possibility of utilizing these fibers in ring spinning applications. This, in turn, has renewed interest in the impacts of crop termination practices and harvest technologies (i.e., stripper versus picker).

The randomized, complete block experimental design consisted of three varieties, two termination treatments, and two harvest treatments. The varieties and treatments were as follows:

Cotton Varieties	Termination Treatments	Harvest Treatments
(1) Paymaster 2326RR	(1) Single, high-rate paraquat applied when bolls are 80% open	(2) Picker
(2) FiberMax 960RR	(2) Ethephon/defoliant applied when bolls were 60% open, followed by sequential applications of paraquat	(1) Stripper with field cleaner
(3) FiberMax 989RR		

The PM 2326RR was the dominant variety for several years prior to the adoption of the newer ones. The FM 960RR and FM 989RR were two of the more dominant varieties in the 2004-05 crop year.

The single, high-rate application of paraquat represents a typical 'low-cost' approach to defoliating and killing the cotton plant. A typical, more expensive treatment is to apply ethephon mixed with a defoliant when the bolls are 60% open, and then follow with sequential applications of paraquat to finish the desiccation and killing of the plant.

The dominant technology used for harvest on the Texas Plains is the stripper, either with or without the field cleaner. The field cleaner was used in this experiment. The picker technology is seldom used, but the use is trending upward, because many of the new varieties are quite suitable for picking and textile industry prefers picked cotton over stripped cotton.

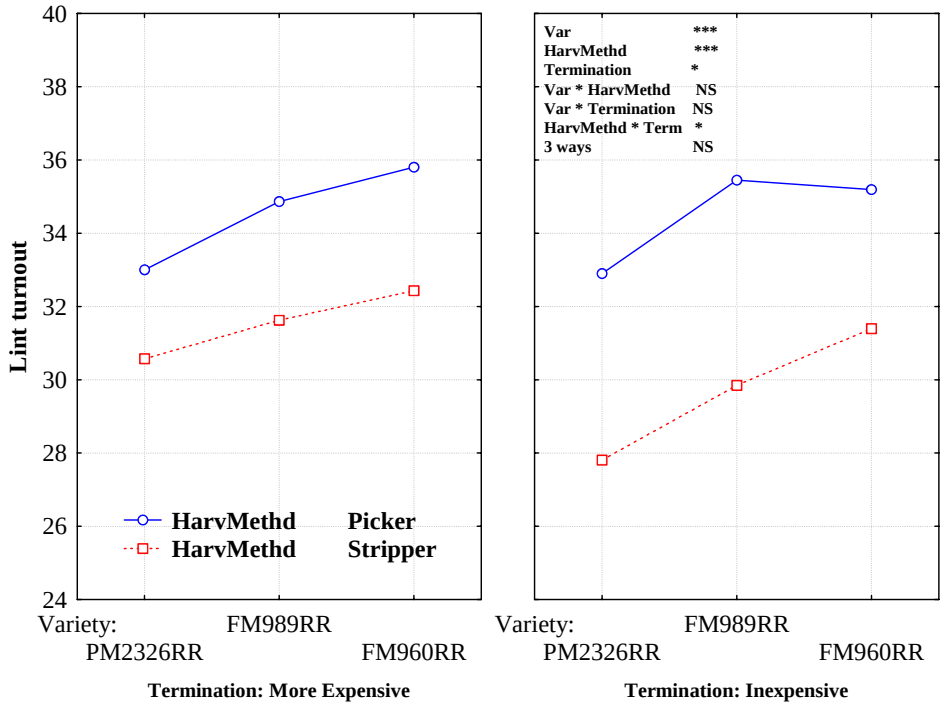
The following evaluations were done at the International Textile Center:

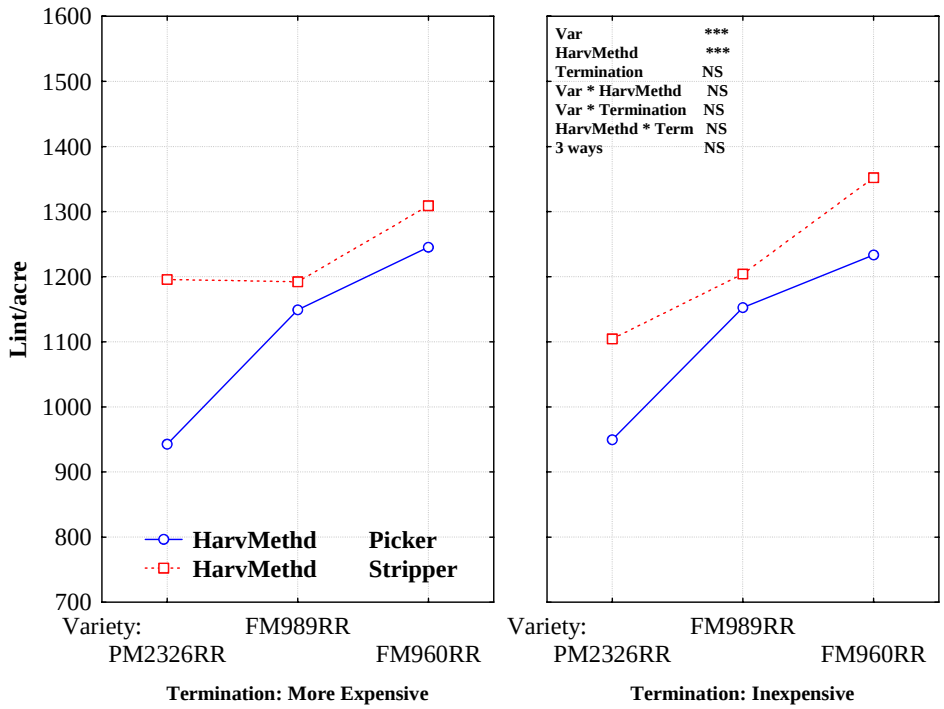
- HVI and AFIS measurements were taken on all the fiber samples generated by the experiment.
- The fibers were spun into 22 Ne yarns on both the ring (Suessen Fiomax 1000) and the rotor (Rieter R20) spinning systems.
- The yarns were tested for strength (Uster Tensorapid and Scott Tester) and evenness/imperfections/hairiness (Uster Tester 3).
- The ring spun yarns were knitted into single jersey fabric (Fiber Analysis Knitter) and dyed (direct blue 80).
- The dyed fabrics were inspected by trained technicians who counted the number of white specks per 10 square inches of fabric.

Results

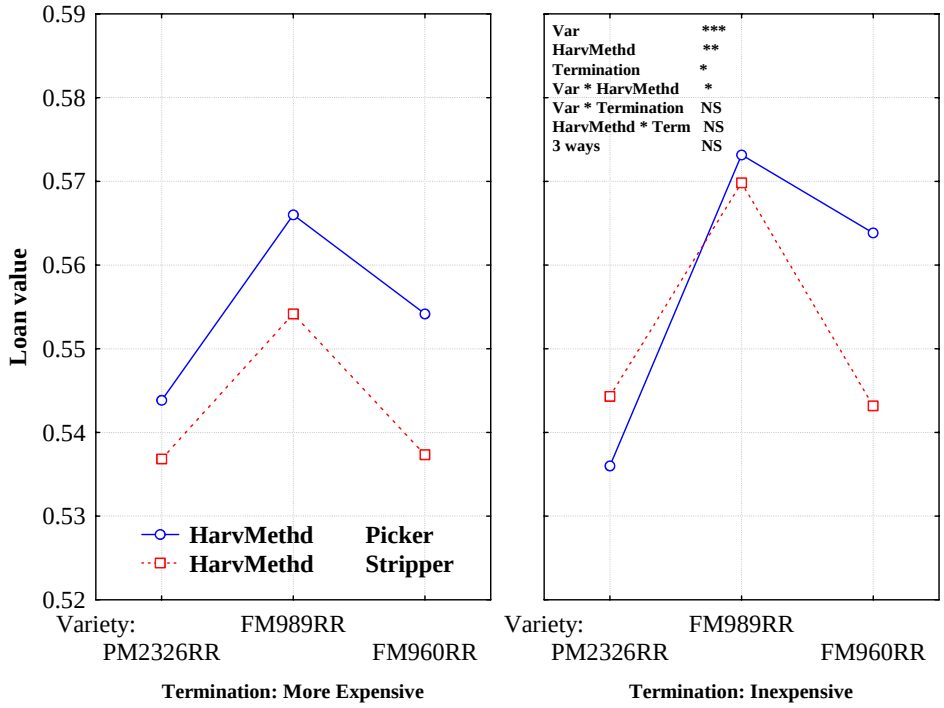
1. Agronomic data

The lint turnout is higher with the more expensive termination method when the cotton is stripper harvested while there is no difference between termination methods when the cotton is machine picked. The FM varieties have higher lint turnout than the PM 2326 in all circumstances. As expected, machine picked cotton picked has a much higher turnout that stripped cotton (high trash content). On the other hand, due to field losses, the yield (lint/acre) is better with the stripper harvested cotton. For the more expensive termination method, the loan value is better for the machine picked cotton while it is not for the stripper harvested cotton. These observations translate into a better net value of the crop per acre for the stripper harvested cotton.

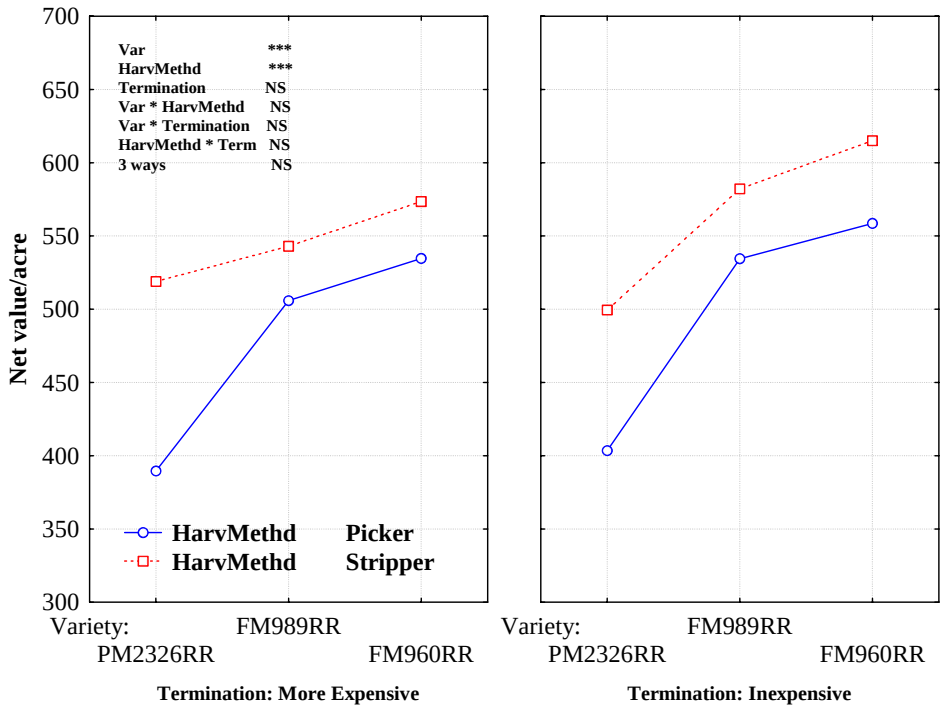




Termination: More Expensive **Termination: Inexpensive**



Termination: More Expensive **Termination: Inexpensive**



2. High Volume Instrument data

For both termination treatments, the micronaire is highest for the PM 2326RR and lowest for the FM 960RR, with the FM 989RR falling in between. Both termination and harvest treatments are statistically significant, with higher micronaire values with picker harvesting.

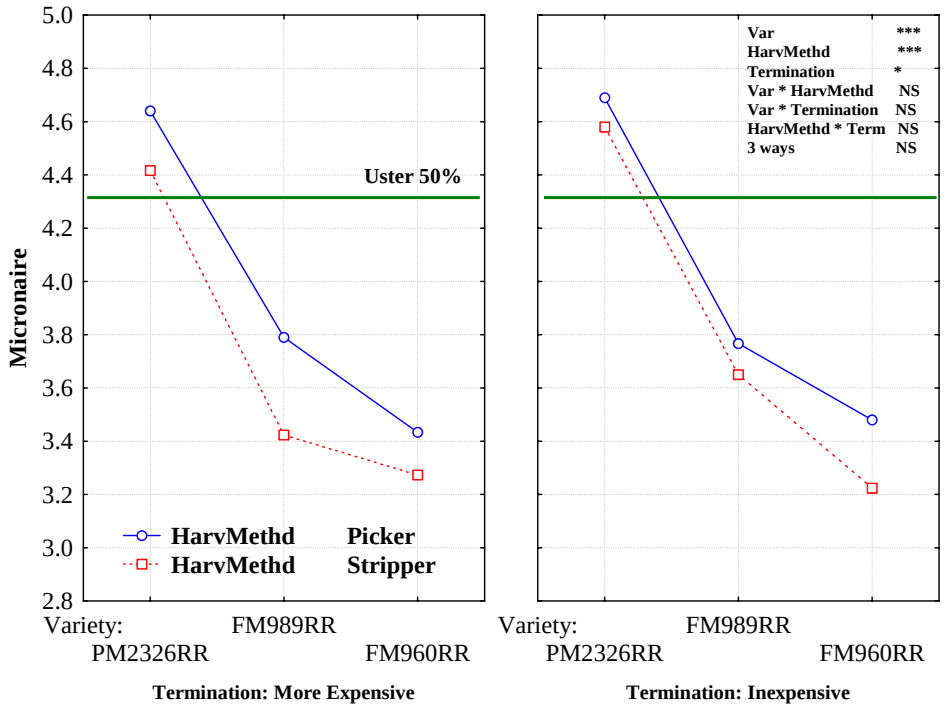
As expected, the upper half mean lengths of the two FiberMax varieties are much longer than the PM 2326RR. The termination treatments and the harvesting methods did not significantly affect the fiber lengths. The picker harvested samples were significantly longer than the stripper harvested samples last year. It is not the case this year.

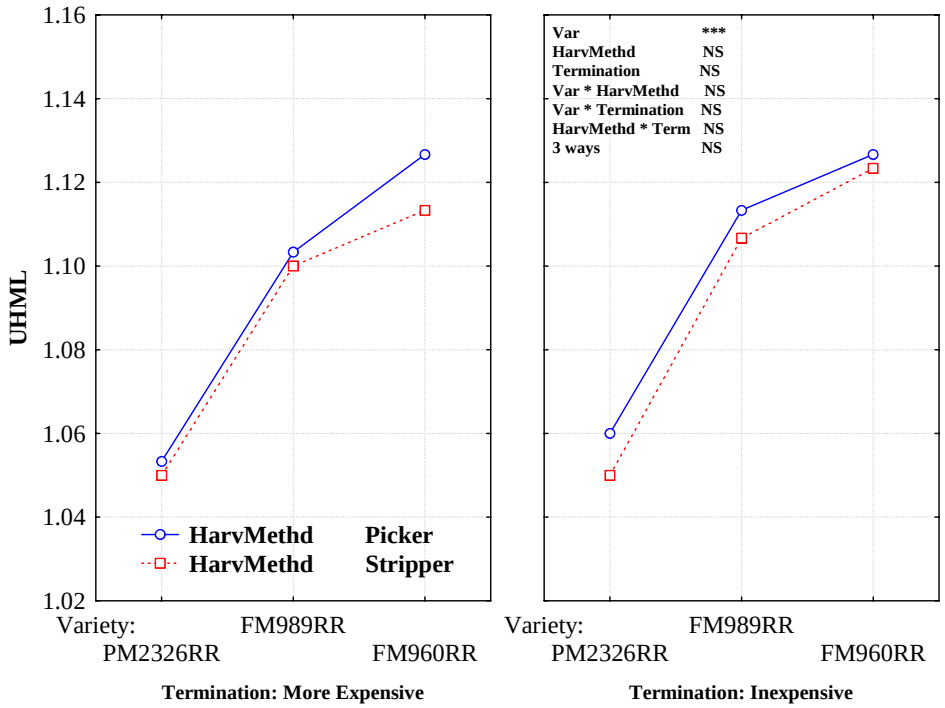
The length uniformity index of the PM 2326RR is superior to the FM varieties. This is a troublesome result, because it suggests that the length distributions for the FM varieties may not be good (same observation last year). Length uniformity is not significantly affected by both the termination treatments and the harvesting method.

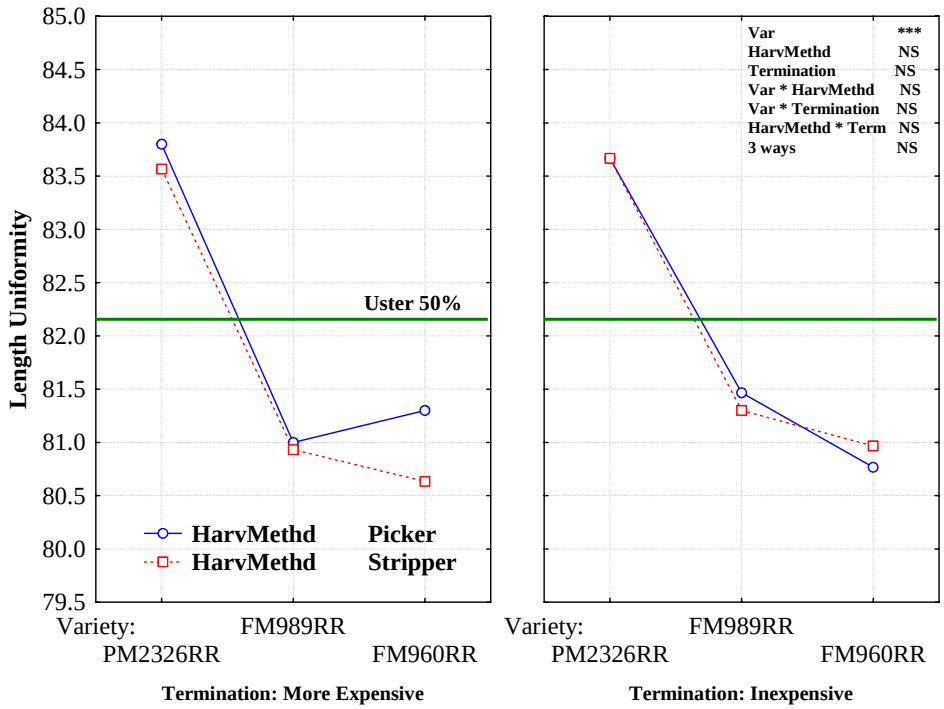
The HVI strength of the fibers is not significantly affected by the harvest method or the termination.

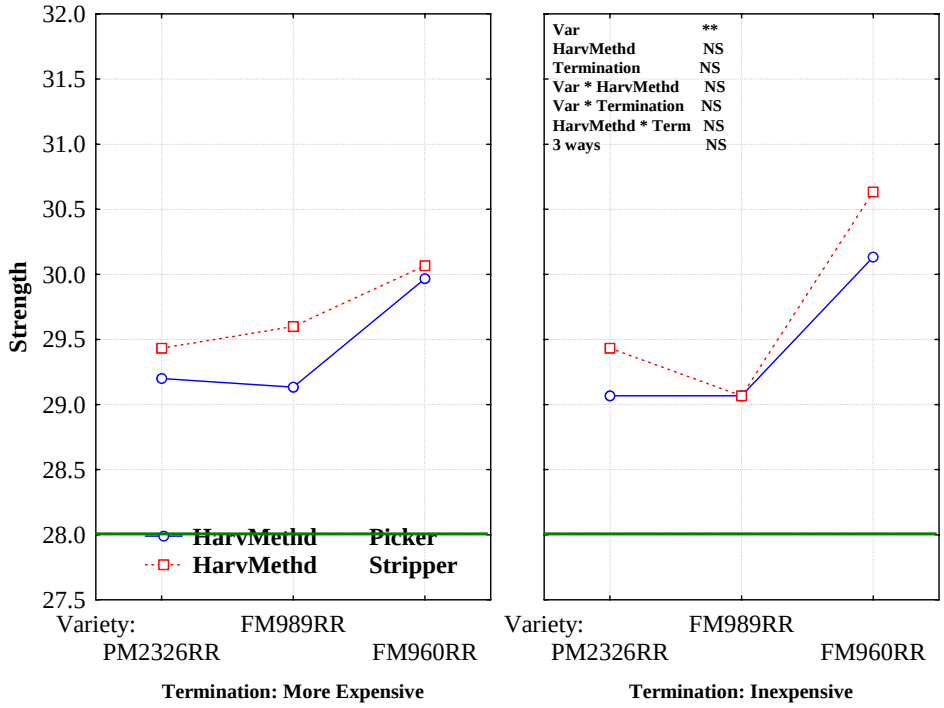
The elongation results are not significantly affected by both the termination treatment and the harvesting method. PM 2326RR exhibits a much higher elongation (approximately a third higher) than the FM varieties.

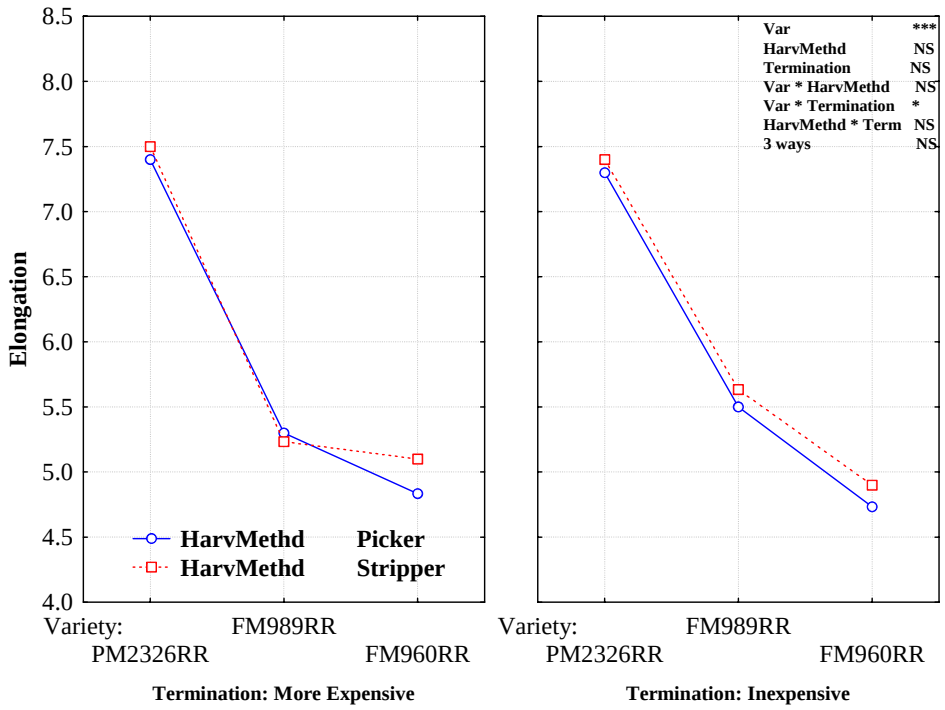
Regarding the color measurements, the termination treatments and the harvest method had no significant impact on reflectance (Rd) and yellowness (+b) readings. The FM varieties are brighter and whiter than the PM 2326 RR. In conclusion, with the exception of micronaire, the treatments applied (termination and harvesting) had no significant impact on fiber quality as measured with HVI.



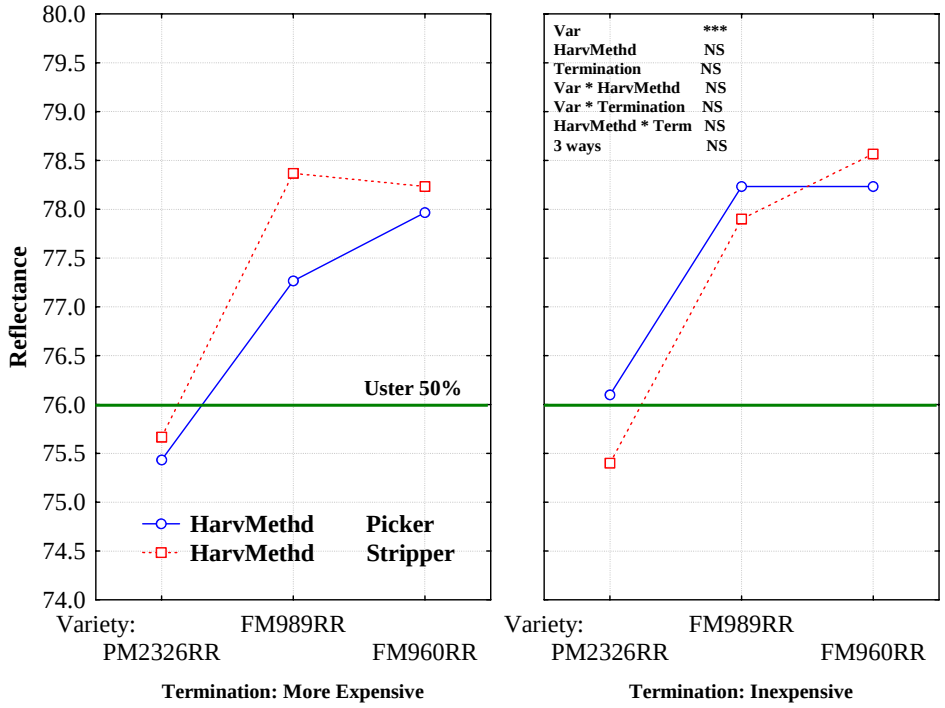



Length Uniformity
85.0
84.5
84.0
83.5
83.0
82.5
82.0
81.5
81.0
80.5
80.0
79.5
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

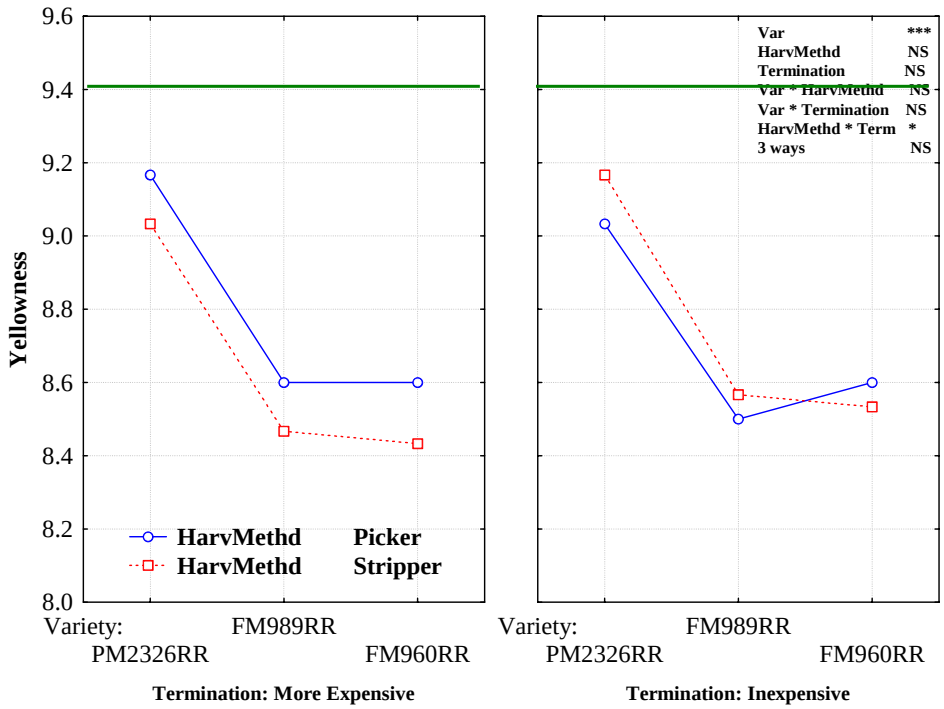

Strength
32.0
31.5
31.0
30.5
30.0
29.5
29.0
28.5
28.0
27.5
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var **
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive



Termination: More Expensive **Termination: Inexpensive**



Termination: More Expensive **Termination: Inexpensive**



3. Advanced Fiber Information System data

The lowest nep counts were found in the PM 2326RR. The reduction in neps by picker harvesting was both large and highly significant, with the magnitudes of the reductions being somewhat more for the FiberMax varieties (the same observation was made last year).

The treatments (termination and harvest) had not effect on the mean length by weight and Upper Quartile Length while the UQL values of the FiberMax varieties were above those for PM 2326RR.

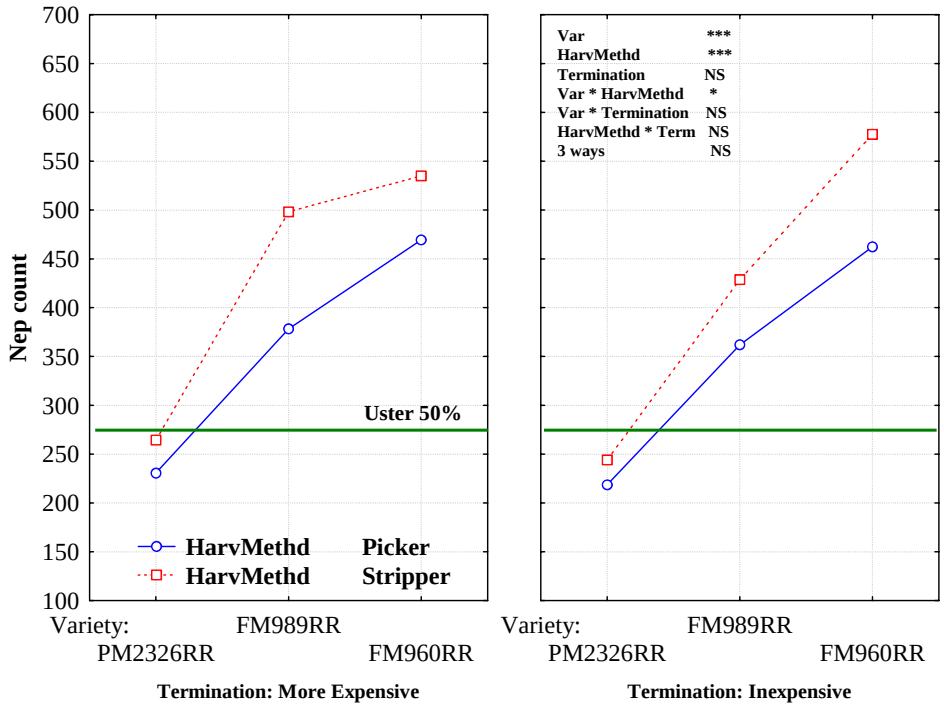
The short fiber content by weight was least for the PM 2326RR. The termination effects on the short fiber content were insignificant, but the picker harvesting reduced short fiber content by a large and significant amount for the more expensive termination method.

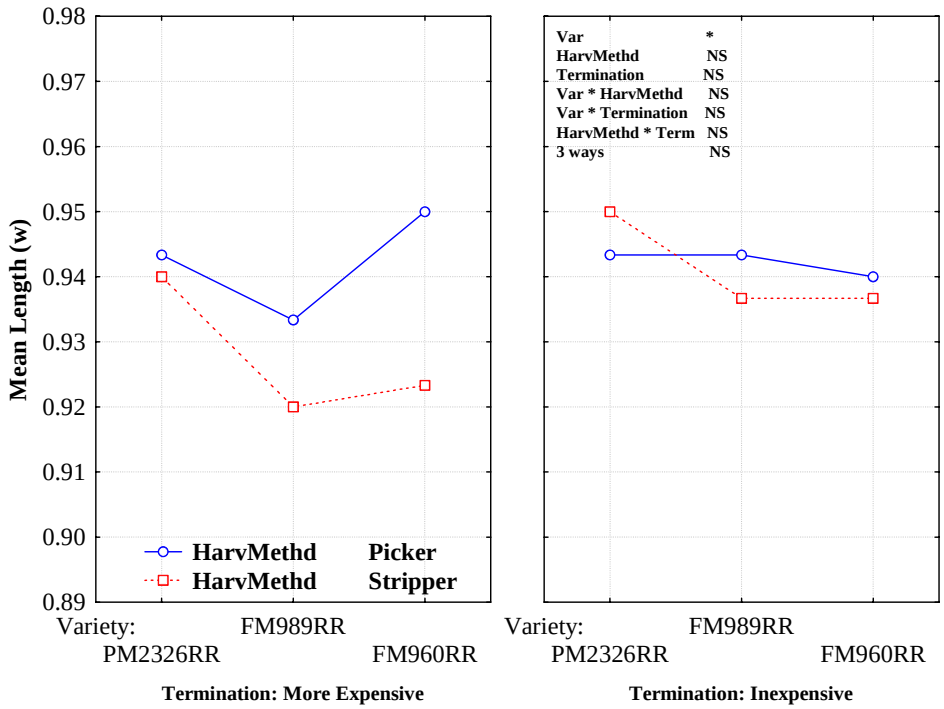
The mean lengths by number of the FiberMax varieties were below those for PM 2326RR indicating that the fiber length distributions of the FM cultivars are not good. The picker harvesting resulted in significant increases in mean length for the more expensive termination method. The short fiber content by number confirms that the FM cultivars have mediocre fiber length distributions.

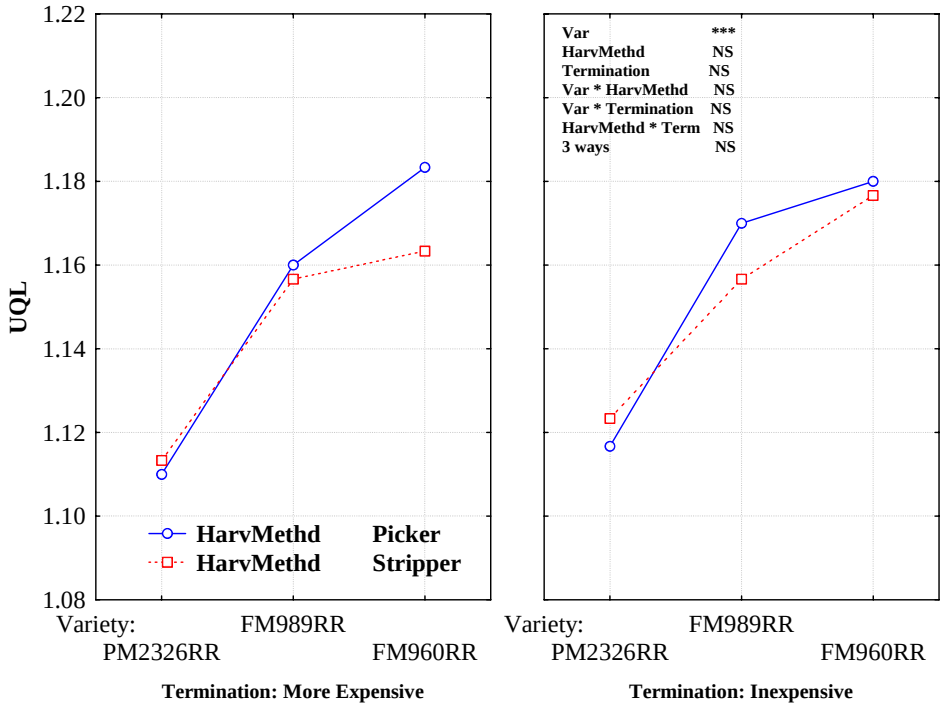
The foregoing fiber length measurements indicate that the PM 2326RR, although it has a shorter staple length than the FiberMax varieties, has superior distributional properties. Therefore we can expect that the spinning performances and yarn quality of the FM cultivars will be below that indicated by HVI results.

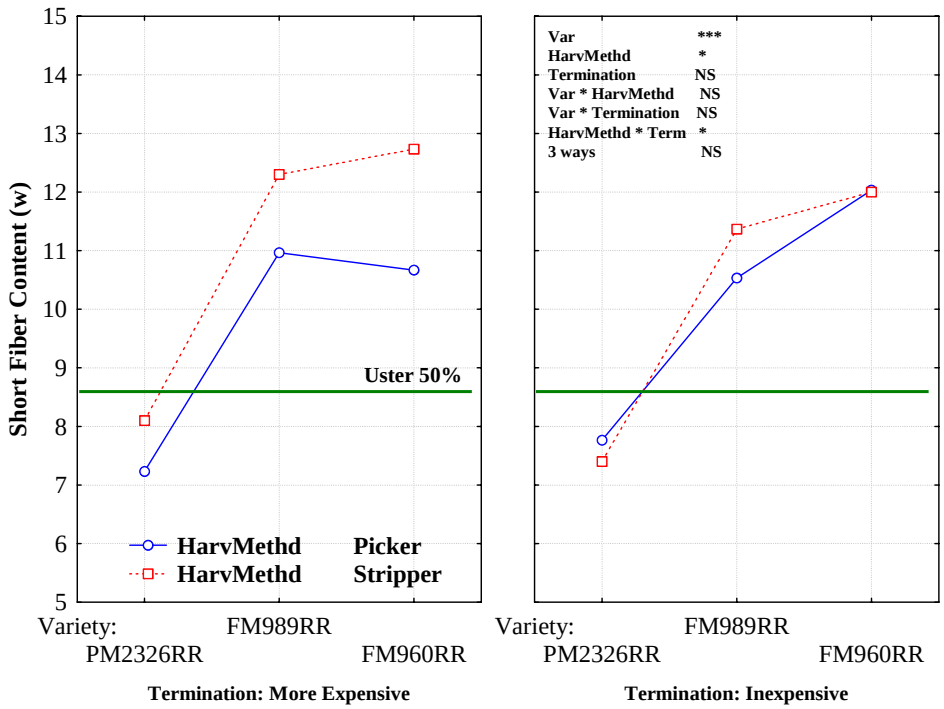
As expected the harvest method had a very significant impact on the visible foreign matter content, with the picker harvested cottons having lower trash content than the stripper harvested cottons.

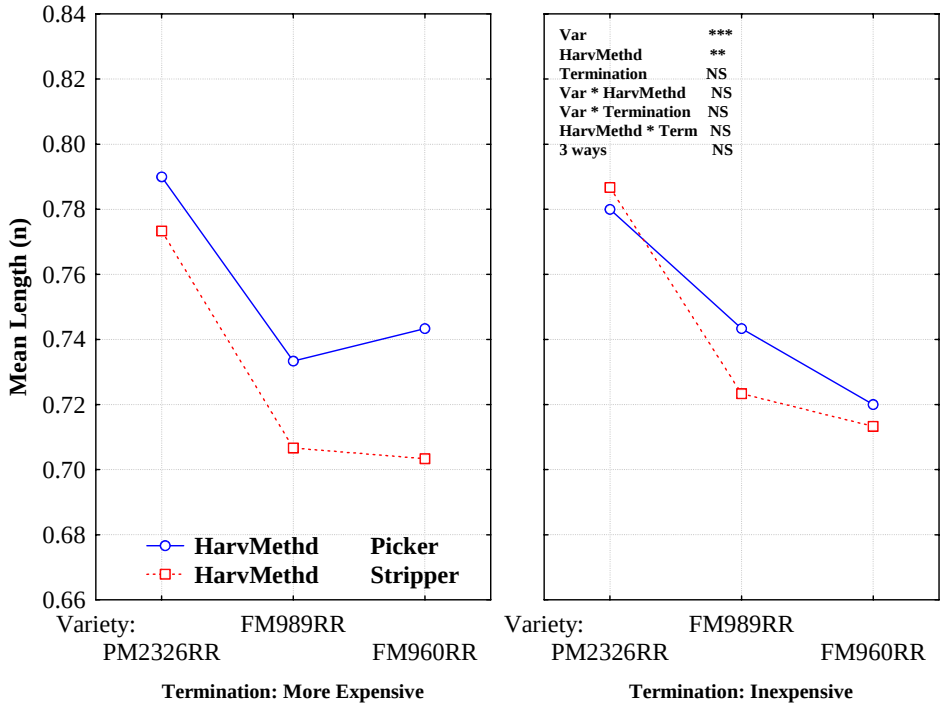
Fineness, immature fiber content and maturity ratio results show that, for the most expensive termination method, picker harvested cottons have a slightly higher fineness than the stripper harvested cottons, with a lower immature fiber content and a better maturity ratio. The maturity ratio was highest for PM 2326RR and lowest for FM 960RR.

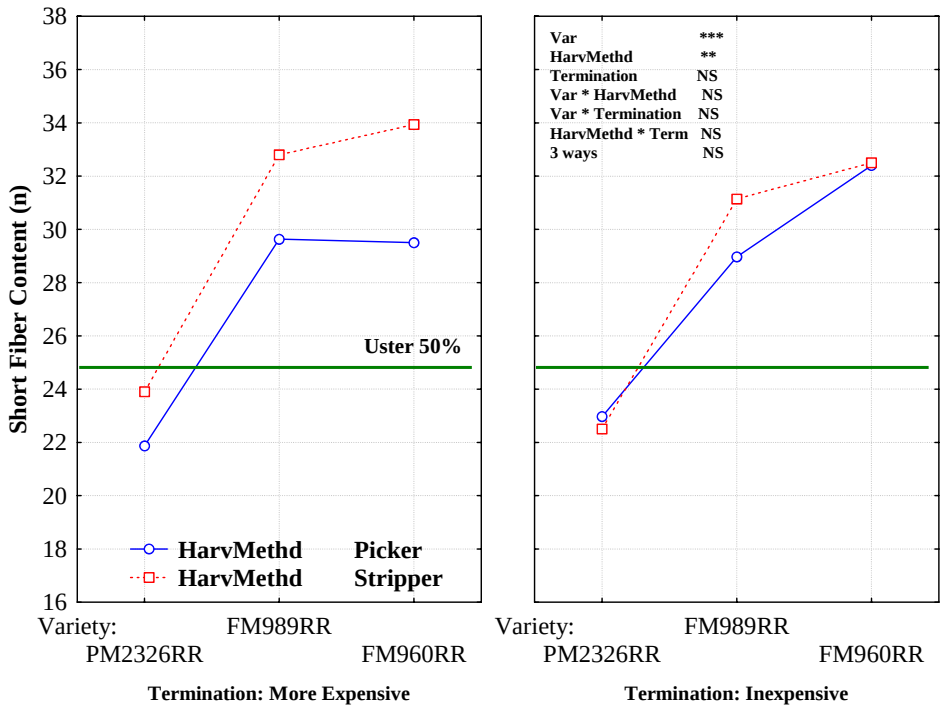


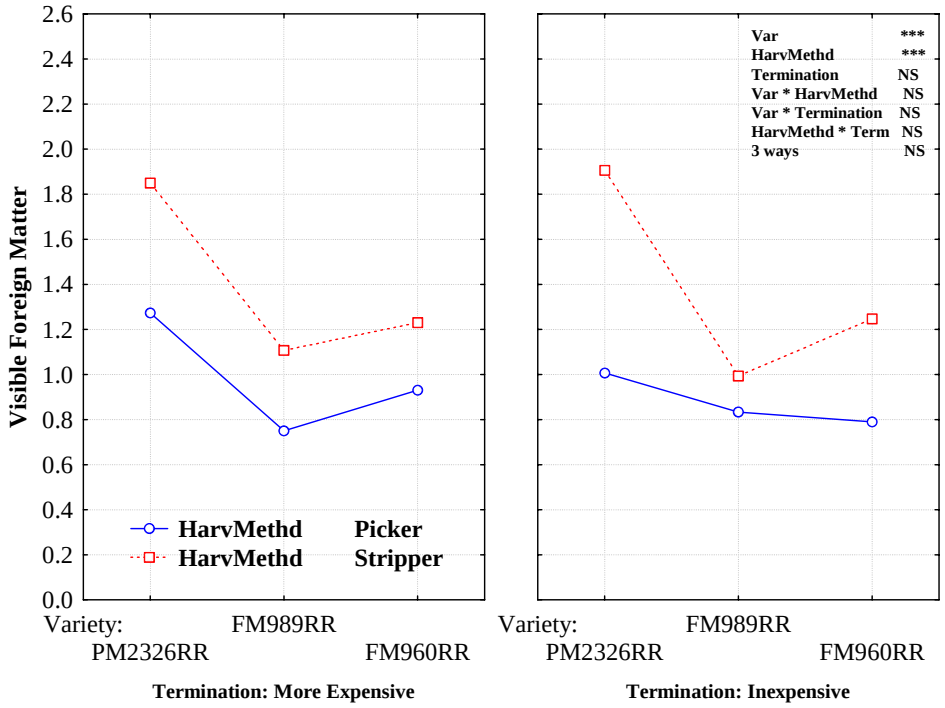

Mean Length (w)
0.98
0.97
0.96
0.95
0.94
0.93
0.92
0.91
0.90
0.89
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var *
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

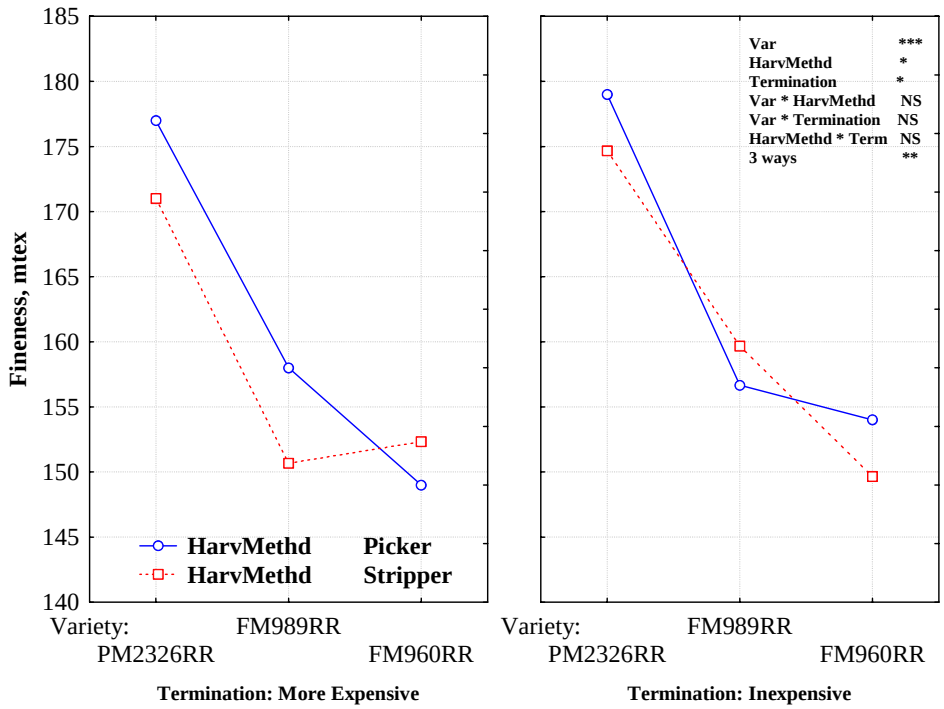

UQL
1.22
1.20
1.18
1.16
1.14
1.12
1.10
1.08
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

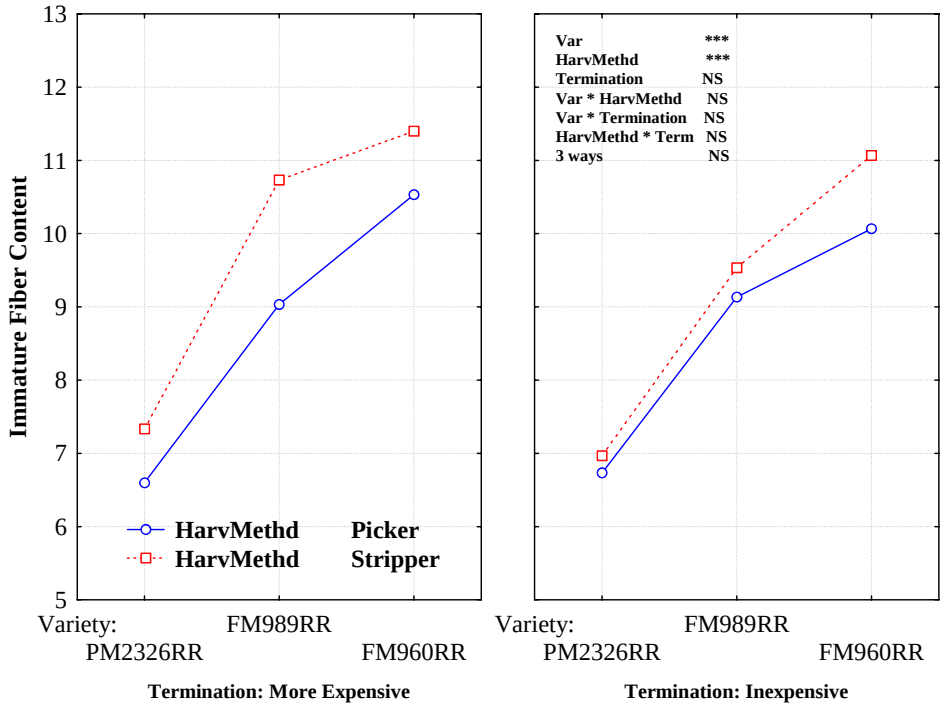

Short Fiber Content (w)
15
14
13
12
11
10
9
8
7
6
5
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd *
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term *
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

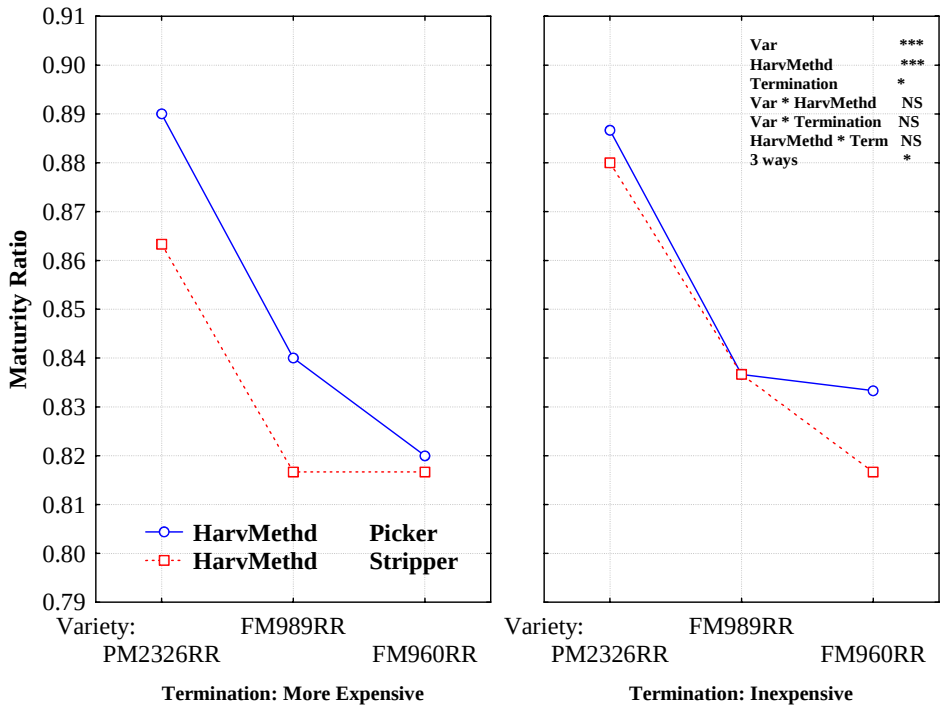

Mean Length (n)
0.84
0.82
0.80
0.78
0.76
0.74
0.72
0.70
0.68
0.66
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd **
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

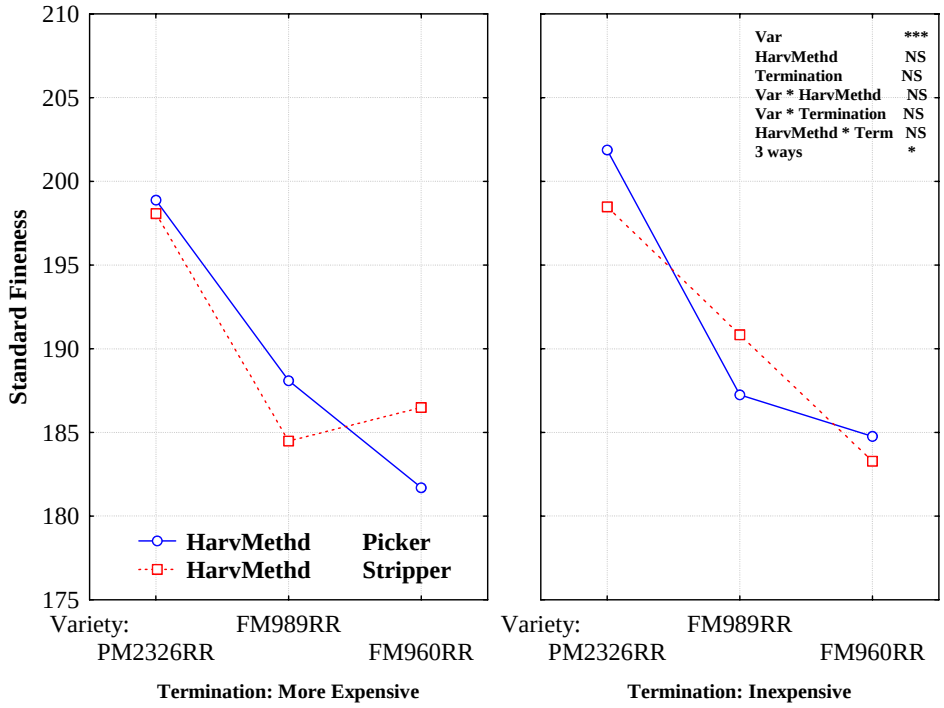

Short Fiber Content (n)
38
36
34
32
30
28
26
24
22
20
18
16
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd **
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive


Visible Foreign Matter
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd ***
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive


Fineness, mtex
185
180
175
170
165
160
155
150
145
140
HarvMethd Picker
HarvMethd Stripper
Variety:
FM989RR
PM2326RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd *
Termination *
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways **
Variety:
FM989RR
PM2326RR
FM960RR
Termination: Inexpensive


Immature Fiber Content
13
12
11
10
9
8
7
6
5
HarvMethd Picker
HarvMethd Stripper
Variety:
FM989RR
PM2326RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd ***
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
FM989RR
PM2326RR
FM960RR
Termination: Inexpensive


Maturity Ratio
0.91
0.90
0.89
0.88
0.87
0.86
0.85
0.84
0.83
0.82
0.81
0.80
0.79
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd ***
Termination *
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways *
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive


Standard Fineness
210
205
200
195
190
185
180
175
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways *
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

4. Ring Spun Yarn data

Yarns of 22 Ne were spun on the ring spinning (Seussen Fiomax 1000) at the International Textile Center. The resulting yarn properties are discussed below.

As observed last year, the highest count-strength product is exhibited by the FM 960RR and the lowest by the PM 2326RR. None of the treatment effects are significant.

As expected from the fiber elongation measurements, the yarn elongation is much greater for the PM 2326RR. None of the treatment effects are significant.

As expected, yarn tenacity results are similar to the CSP results. Overall, the work-to-break results are not affected by varieties, termination method or harvesting method.

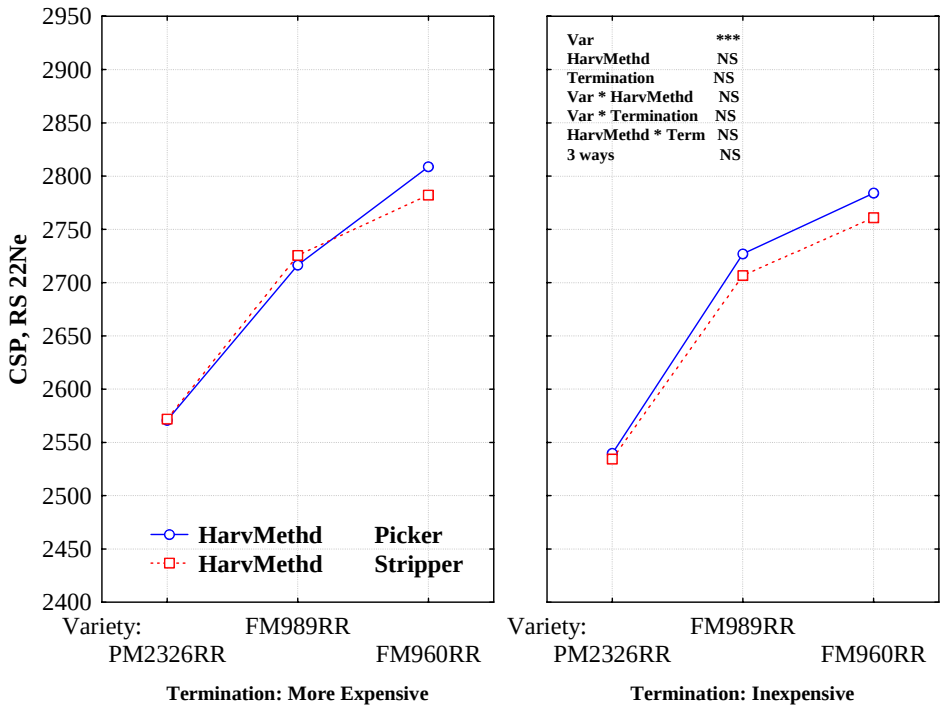
The CV% values for the yarns are significantly lower (i.e., the yarns are more even) with picker harvesting. The best performer in this regard is the PM 2326RR, which is also less sensitive to harvest treatments. The termination treatments had no significant impacts.

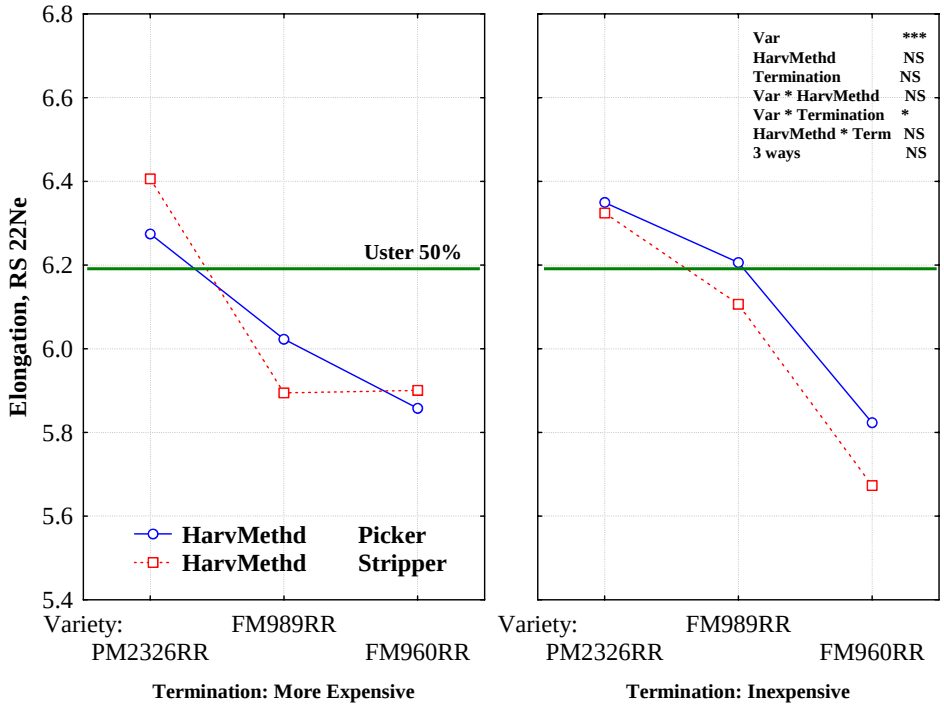
Thin places are also significantly reduced with picker harvesting, although the PM 2326RR is less affected. Termination treatments had no affect.

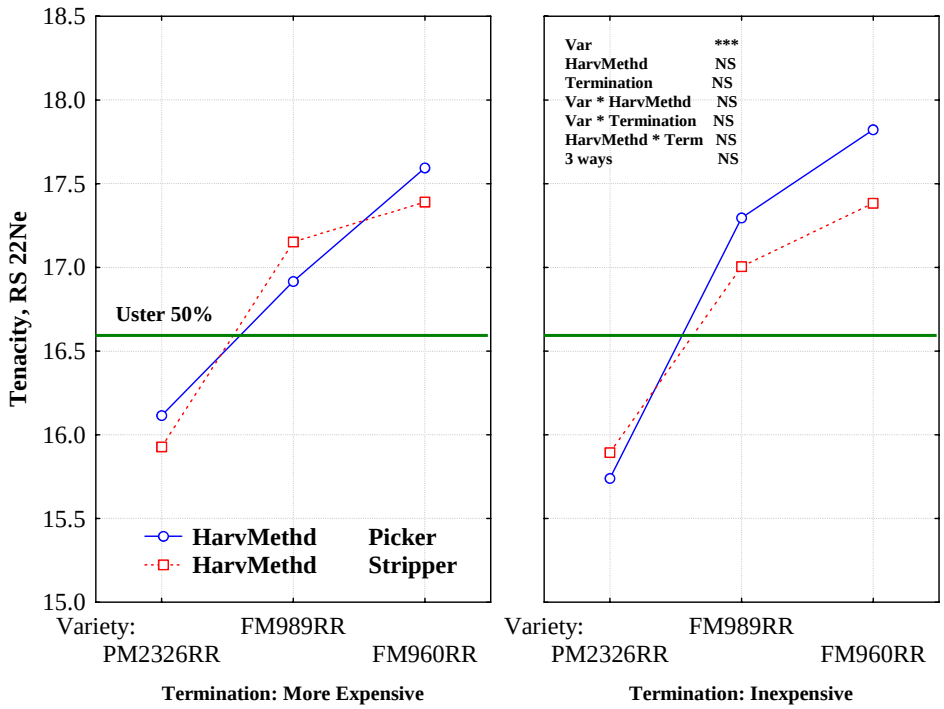
Thick places are the least for the PM 2326RR. Picker harvesting significantly reduces thick places except for PM 2326RR, and termination treatments are again insignificant.

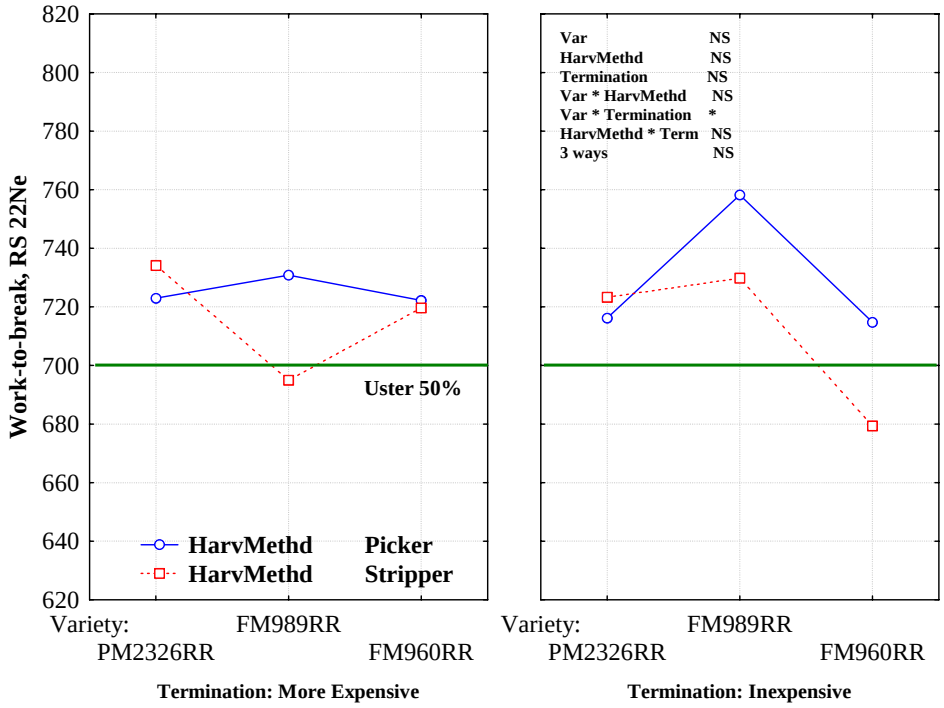
Neps are also lowest for the PM 2326RR. As with the previous measurements, picker harvesting significantly reduces the neps count, but termination treatments are insignificant.

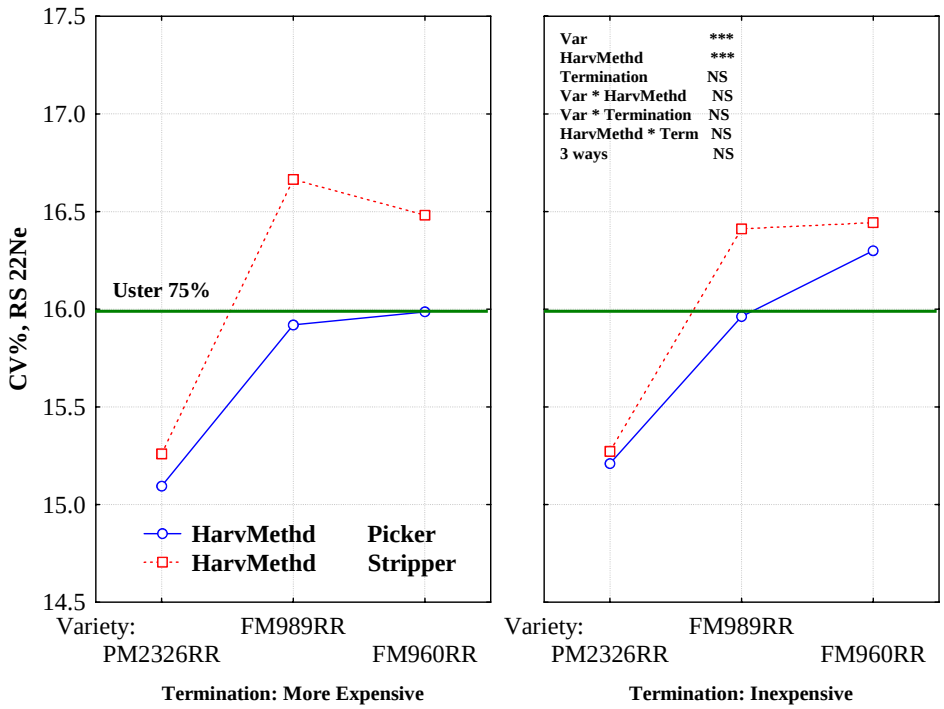
Yarn hairiness is also lowest for PM 2326RR. Again, termination treatments have no effect, but the picker harvesting significantly reduces hairiness.

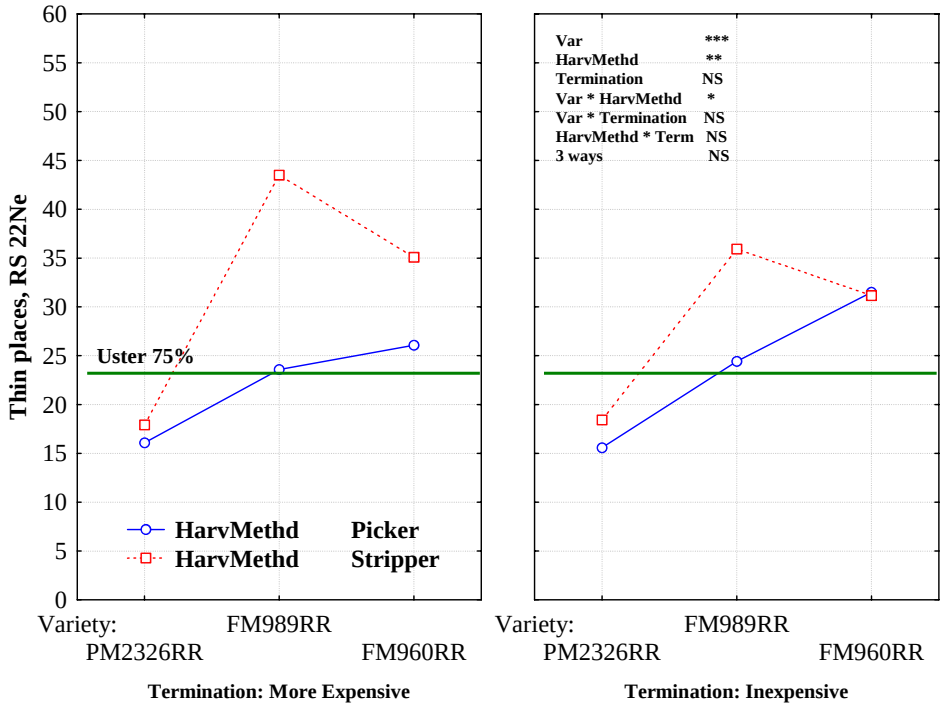

CSP, RS 22Ne
2950
2900
2850
2800
2750
2700
2650
2600
2550
2500
2450
2400
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

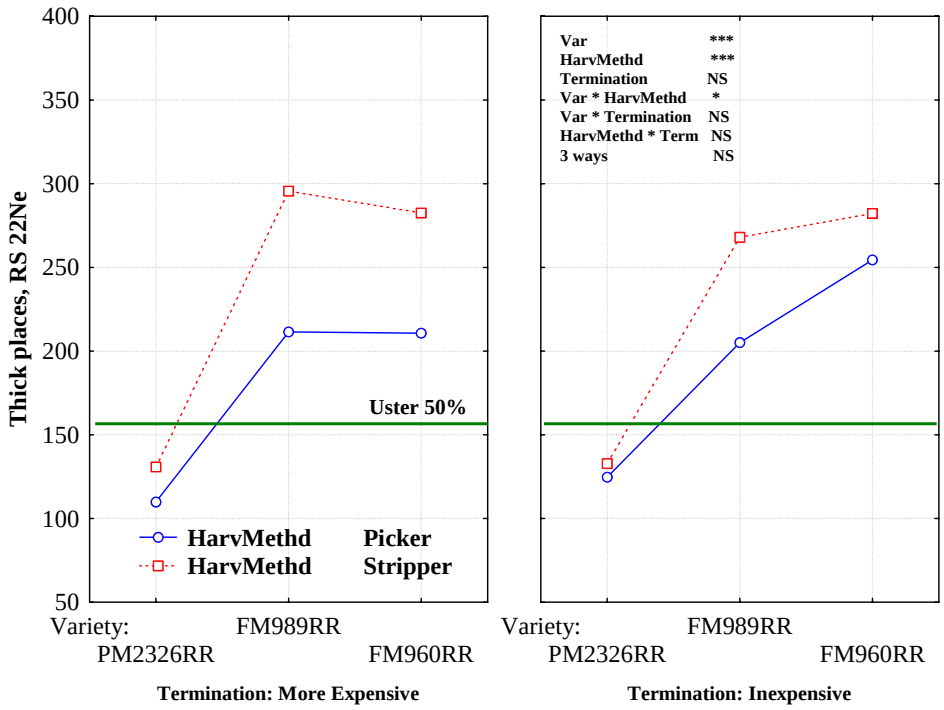

Elongation, RS 22Ne
6.8
6.6
6.4
6.2
6.0
5.8
5.6
5.4
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination *
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

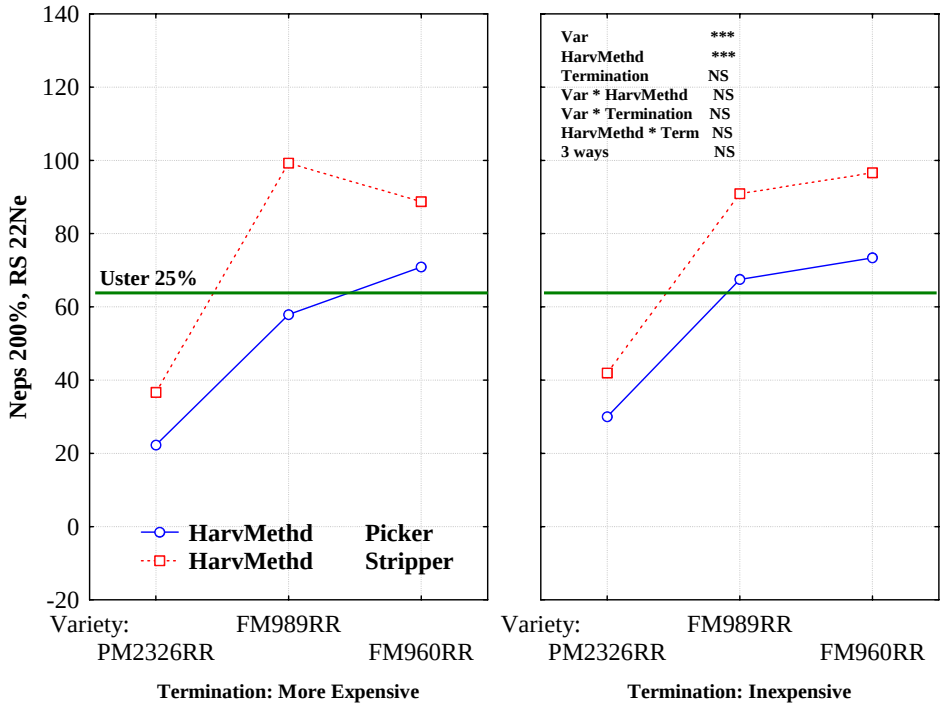

Tenacity, RS 22Ne
18.5
18.0
17.5
17.0
16.5
16.0
15.5
15.0
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Variety: FM989RR
PM2326RR FM960RR
Termination: Inexpensive

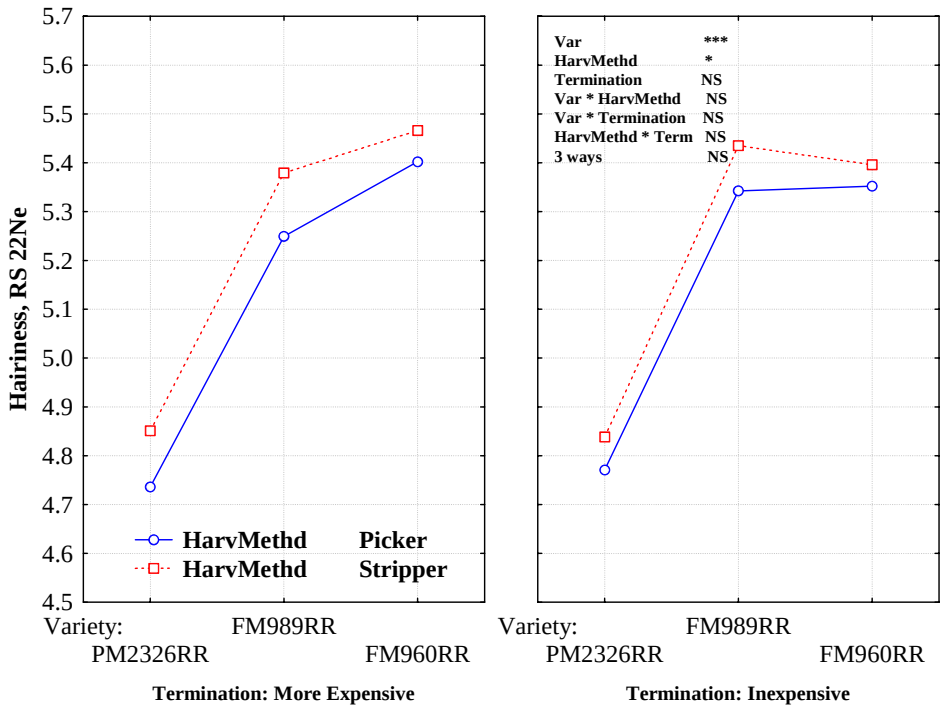

Work-to-break, RS 22Ne
820
800
780
760
740
720
700
680
660
640
620
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Var NS
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination *
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Variety: FM989RR
PM2326RR FM960RR
Termination: Inexpensive


CV%, RS 22Ne
17.5
17.0
16.5
16.0
15.5
15.0
14.5
Uster 75%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd ***
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Termination: Inexpensive


Thin places, RS 22Ne
60
55
50
45
40
35
30
25
20
15
10
5
0
Uster 75%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd **
Termination NS
Var * HarvMethd *
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Termination: Inexpensive


Thick places, RS 22Ne
400
350
300
250
200
150
100
50
Uster 50%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd ***
Termination NS
Var * HarvMethd *
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Termination: Inexpensive

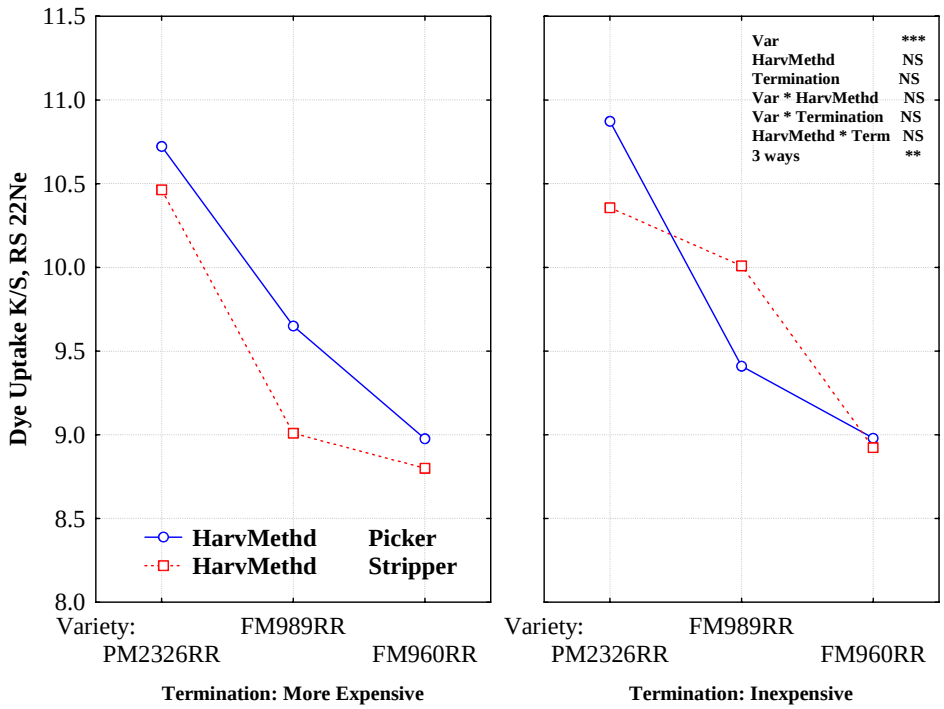

Neps 200%, RS 22Ne
140
120
100
80
60
40
20
0
-20
Uster 25%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd ***
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Termination: Inexpensive

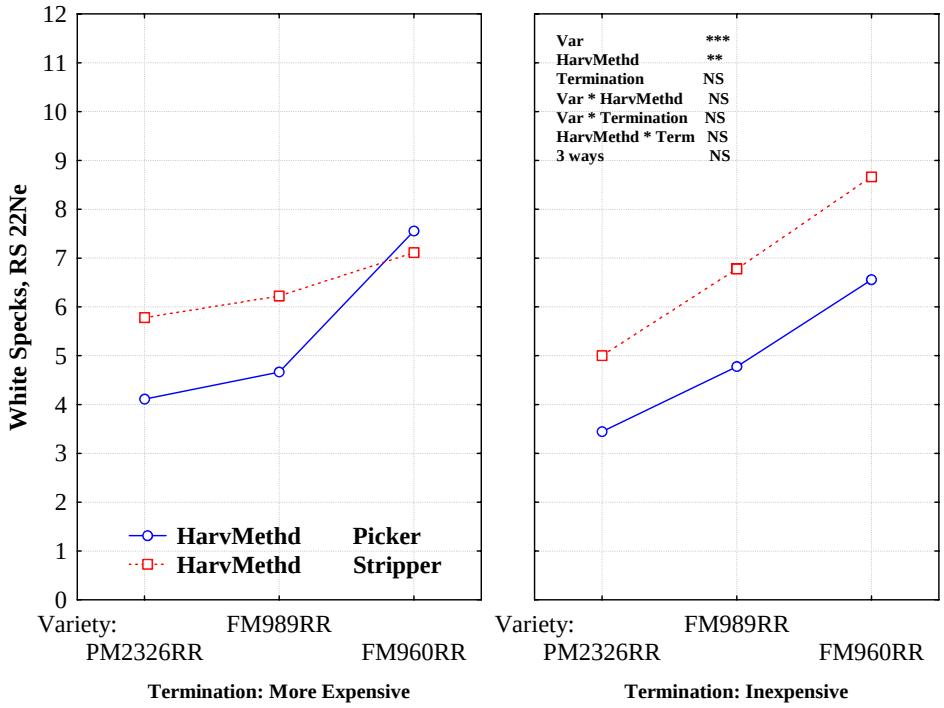


5. Knitted Fabric (from ring spun yarn) data

Using knitted fabric made with the ring-spun 22 Ne yarns, dyeing was done using direct blue 80 dye. Then the extent of dye uptake was measured using a spectrophotometer and the white specks per 10 square inches of fabric were counted by trained technicians. The poorest performer in terms of dye uptake was the FM 960RR (same observation last year).

The white speck counts were the highest for FM 960RR. Picker harvested cottons had less white specks than stripper harvested cottons.


Dye Uptake K/S, RS 22Ne
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways **
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive


White Specks, RS 22Ne
12
11
10
9
8
7
6
5
4
3
2
1
0
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd **
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

6. Rotor Yarn data

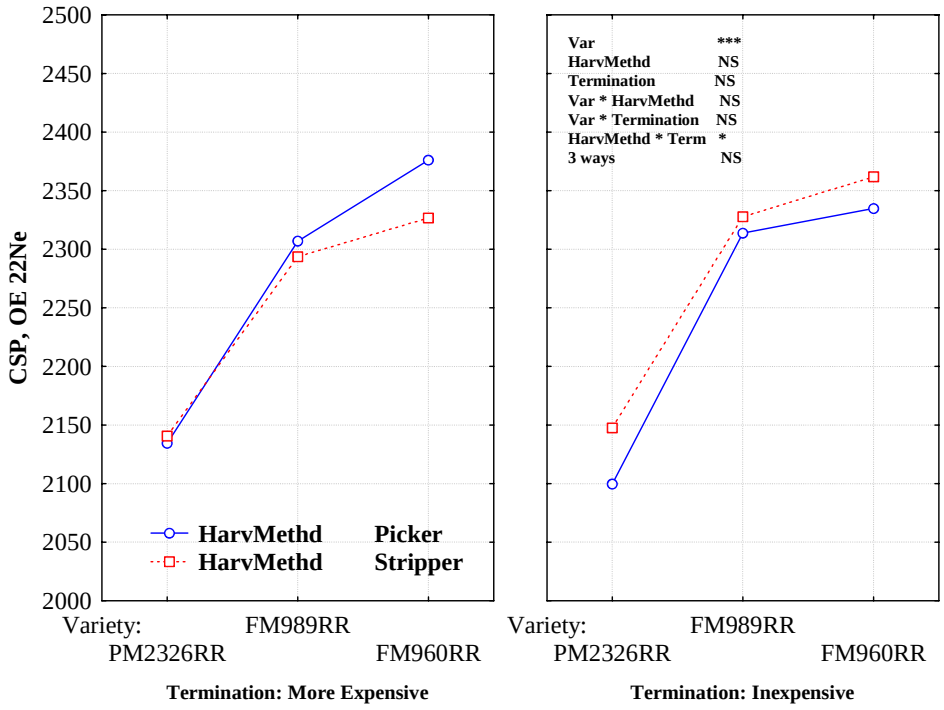
Yarns of 22 Ne were rotor spun (Reiter R20) at the International Textile Center. The resulting yarn properties are discussed below.

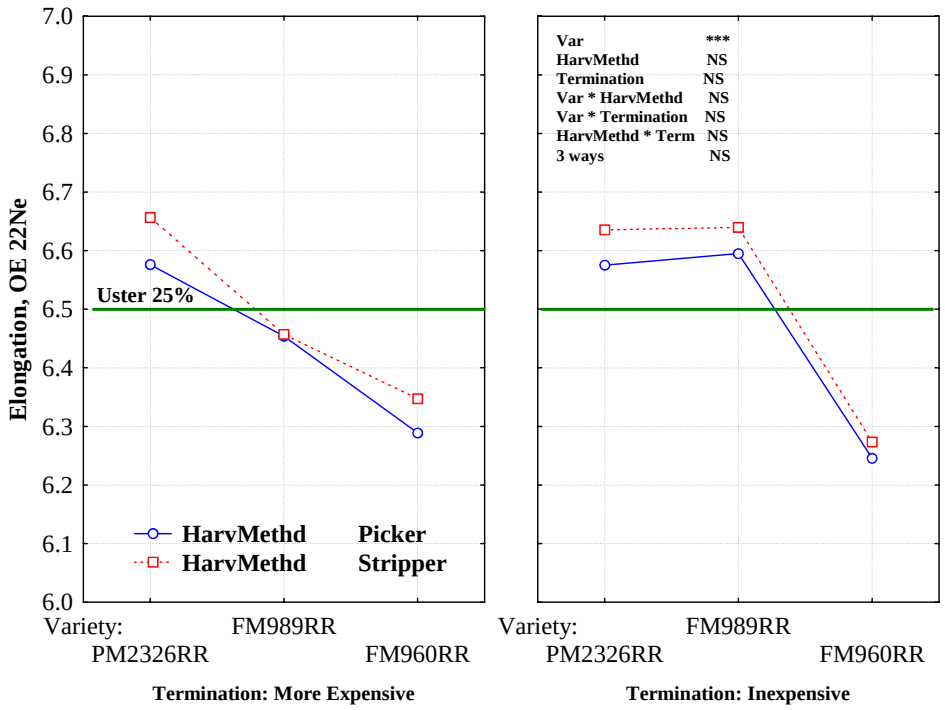
The CSPs are much stronger for the FiberMax varieties. The termination treatments have no effect on CSP results.

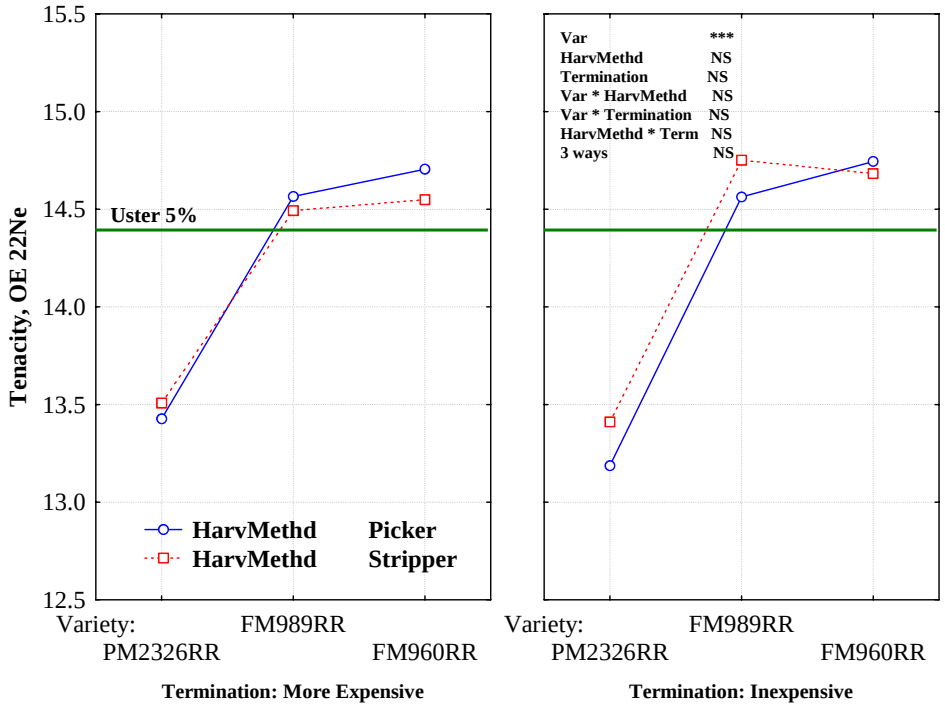
Yarn elongation is much better for the PM 2326RR. The yarn tenacities for these rotor-spun yarns look very similar to results for the ring-spun yarns. Neither termination nor harvest treatments significantly impact these results. The work-to-break results for the rotor-spun yarns are also similar to results for the ring-spun.

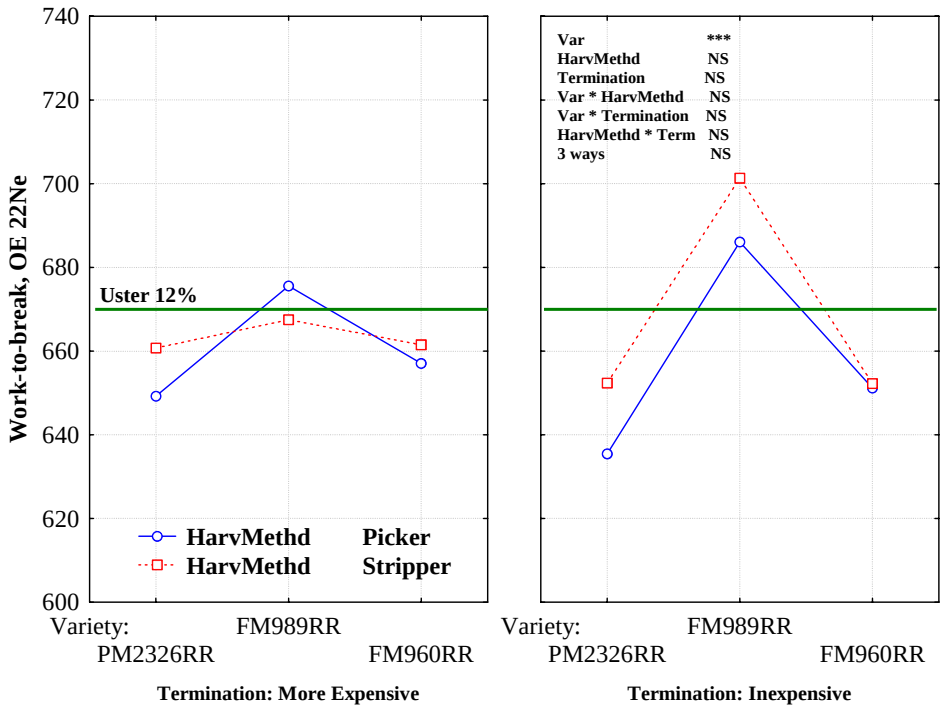
As observed last year, the results on yarn evenness have changed dramatically in favor of the FiberMax varieties with rotor spinning. The same can be said for thin places and thick places. Harvesting methods and termination treatments had no impact.

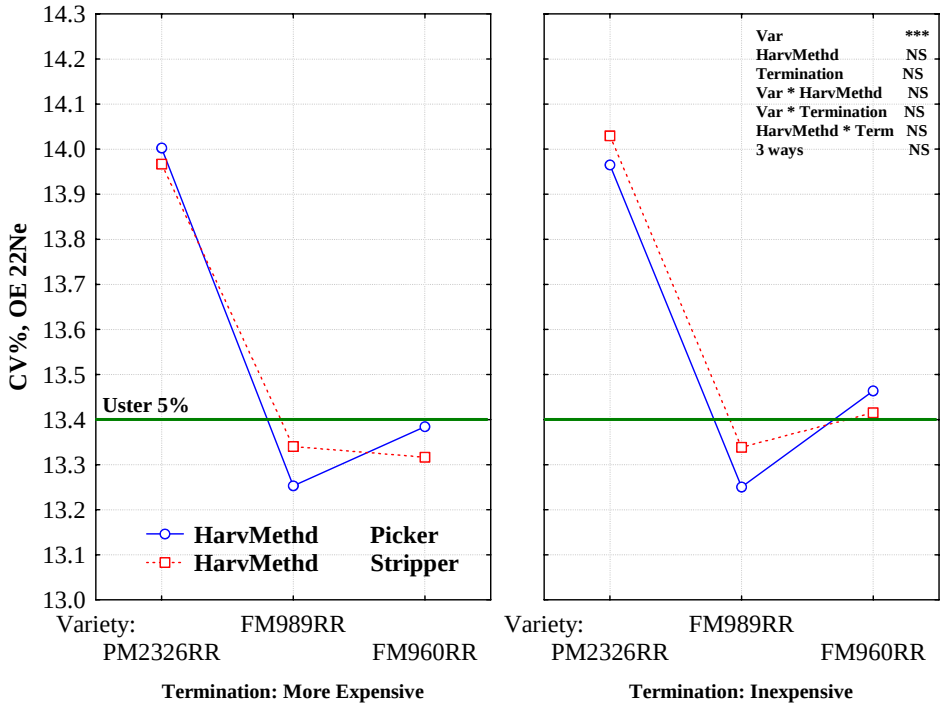
Finally, the neps are a non-issue, with all the nep counts being very low and not affected by treatments. Hairiness levels are also low; however, there is a significant improvement with picker harvesting.

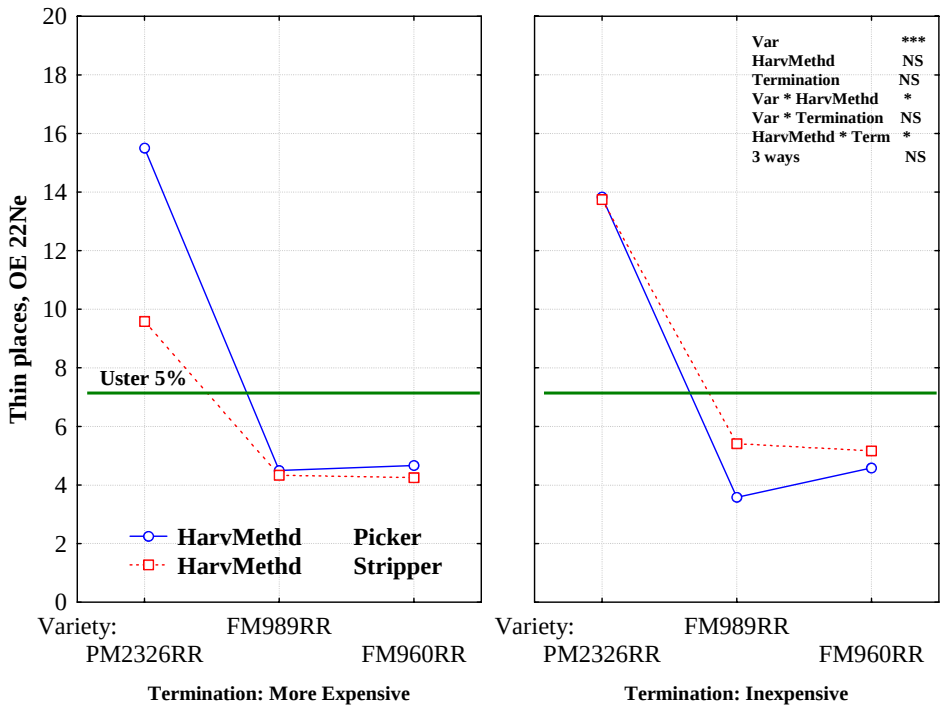


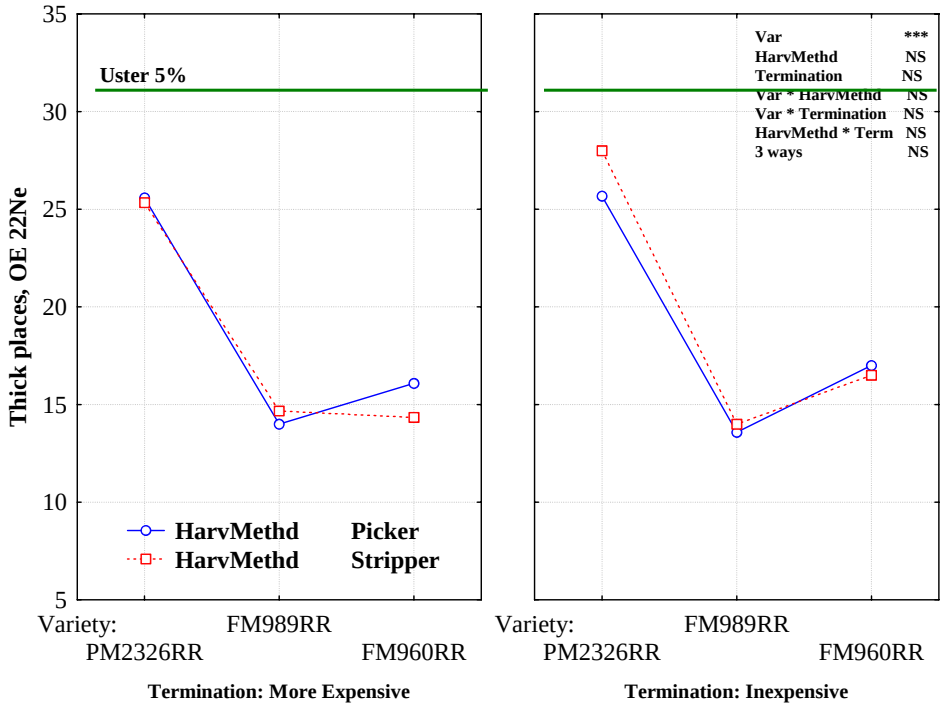

Elongation, OE 22Ne
7.0
6.9
6.8
6.7
6.6
6.5
6.4
6.3
6.2
6.1
6.0
Uster 25%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

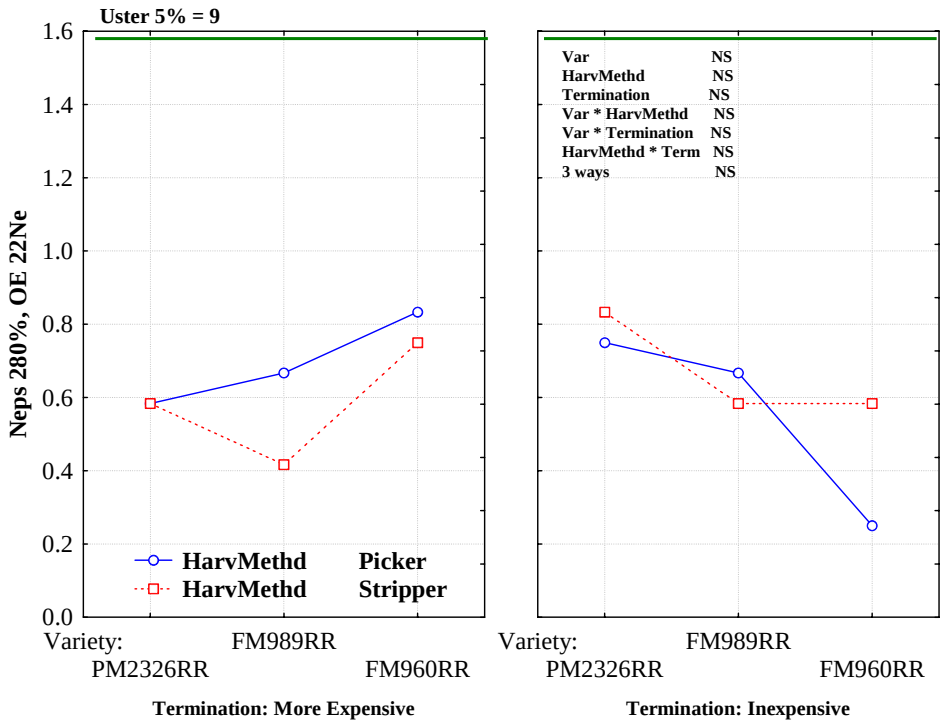

Tenacity, OE 22Ne
15.5
15.0
14.5
14.0
13.5
13.0
12.5
Uster 5%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive

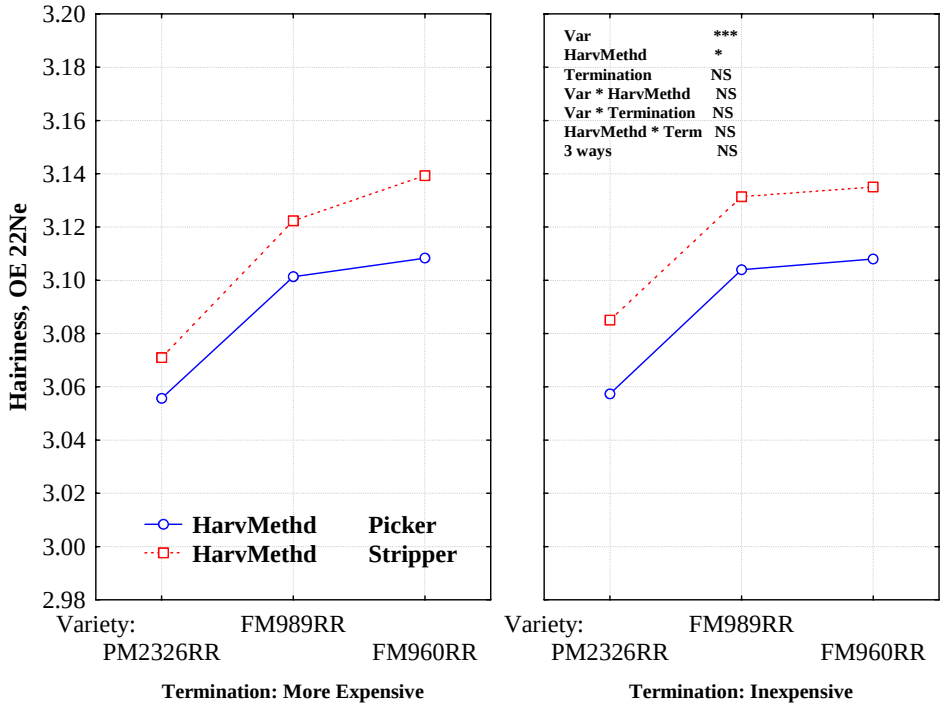

Work-to-break, OE 22Ne
740
720
700
680
660
640
620
600
Uster 12%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive


CV%, OE 22Ne
14.3
14.2
14.1
14.0
13.9
13.8
13.7
13.6
13.5
13.4
13.3
13.2
13.1
13.0
Uster 5%
HarvMethd Picker
HarvMethd Stripper
Variety:
PM2326RR
FM989RR
FM960RR
Termination: More Expensive
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety:
PM2326RR
FM989RR
FM960RR
Termination: Inexpensive


Thin places, OE 22Ne
20
18
16
14
12
10
8
6
4
2
0
Uster 5%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd *
Var * Termination NS
HarvMethd * Term *
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Variety: FM989RR
PM2326RR FM960RR
Termination: Inexpensive


Thick places, OE 22Ne
35
30
25
20
15
10
5
Uster 5%
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Variety: FM989RR
PM2326RR FM960RR
Termination: Inexpensive


Uster 5% = 9
Neps 280%, OE 22Ne
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
HarvMethd Picker
HarvMethd Stripper
Var NS
HarvMethd NS
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Variety: FM989RR
PM2326RR FM960RR
Termination: Inexpensive


Hairiness, OE 22Ne
3.20
3.18
3.16
3.14
3.12
3.10
3.08
3.06
3.04
3.02
3.00
2.98
HarvMethd Picker
HarvMethd Stripper
Var ***
HarvMethd *
Termination NS
Var * HarvMethd NS
Var * Termination NS
HarvMethd * Term NS
3 ways NS
Variety: FM989RR
PM2326RR FM960RR
Termination: More Expensive
Variety: FM989RR
PM2326RR FM960RR
Termination: Inexpensive

7. Conclusion

As observed last year, this evaluation of impact of termination and harvest treatments provided some interesting results. Chief among these is that the 'traditional' variety, the Paymaster 2326RR, performed better in ring spinning than did the two newer varieties FiberMax 960RR and 989RR. Yet the PM 2326RR is perceived by the market to provide a fiber that works well for rotor-spun yarns, but to be a bit short-stapled to work well for ring-spun yarns. Indeed, it is not that the PM 2326RR worked extremely well for the ring spinning. The point is that it worked somewhat better than the other varieties, which are long-stapled enough to make them candidates for ring spinning. The primary explanation for this is that the PM 2326RR had the superior length distribution.

The results were quite different for rotor spinning, which is known to be 'tolerant' of short fibers. The FiberMax varieties gave rotor-spun yarns that were better than those from PM 2326RR in every yarn property except elongation.