



CRC

for

Premium

Quality

Wool

Latest Developments in Prediction

Produced for the CRC for Premium Quality Wool undergraduate program by;
Dr. Trevor Mahar, Australian Wool Testing Authority Ltd.



TEAM Survey - 1996/1997

Results

- 28 mills
- 14 exporters
- 75% use prediction
- Level of satisfaction with TEAM
 - Mills - 91%
 - Exporters - 54%

Conclusions

- TEAM:
 - simple, robust formula
 - provides benchmark
- Future research & improvement
 - by individual organisations
 - should “add-on” to TEAM

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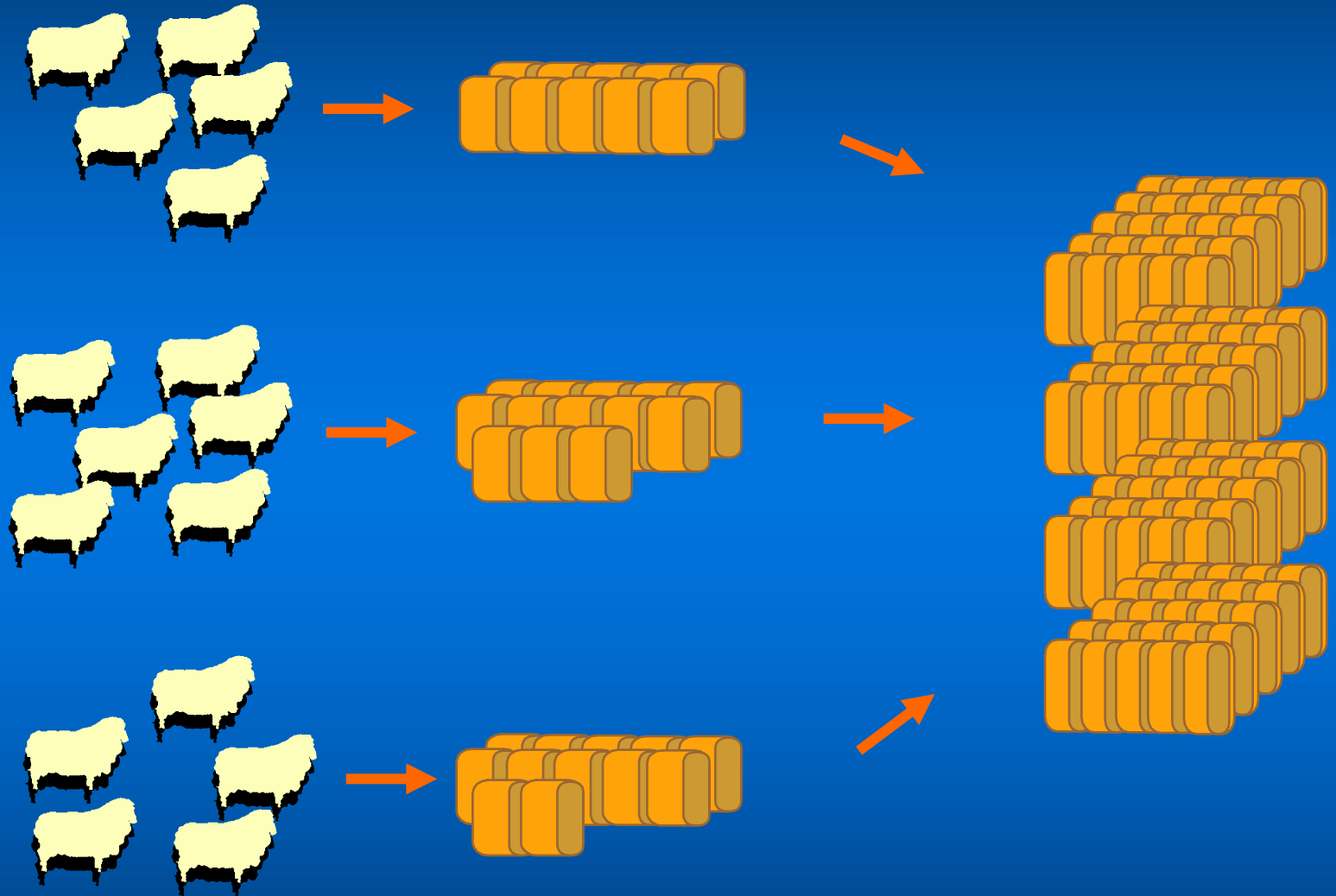


Mob units

Sale lots

Consignment

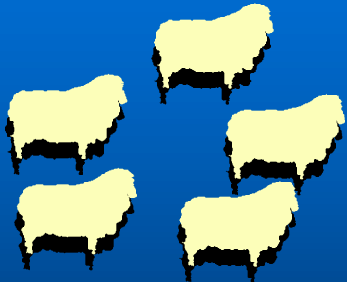
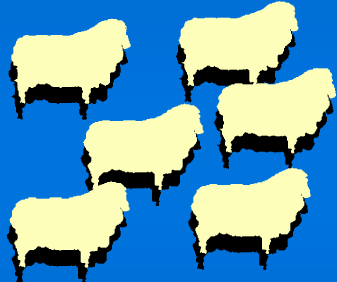
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Mob units

Sale lots



genetic

environmental

factors

husbandry

*Common

* Raw wool properties specific to one lot

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Sale Lot Variability

	<u>Sale Lots</u>	<u>Consignments</u>
Processing:	CSIRO	Commercial mills
number	326	505
Staple Length:		
mean (mm)	56 - 136	65 - 108
CV (%)	10 - 32	13 - 30
Staple Strength (N/Ktex)	13 - 63	26 - 56
Mid - breaks (%)	3 - 95	14 - 88

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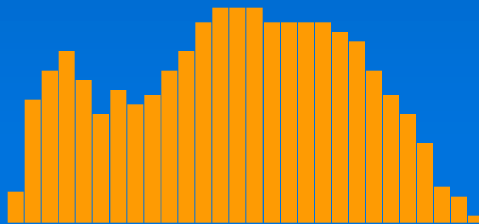


Sale Lot Hauteur and CVH

Fleece

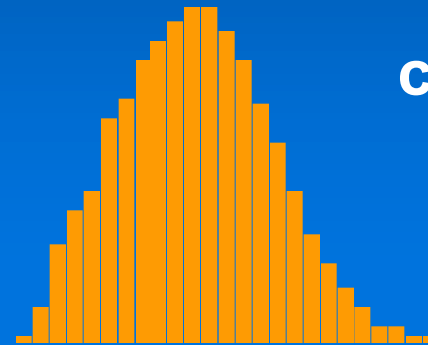
H : 72mm

cvH : 46%



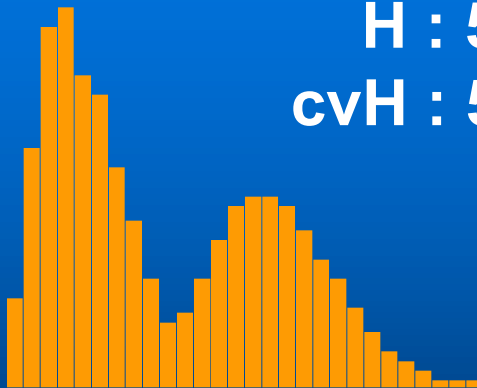
H : 65mm

cvH : 36%



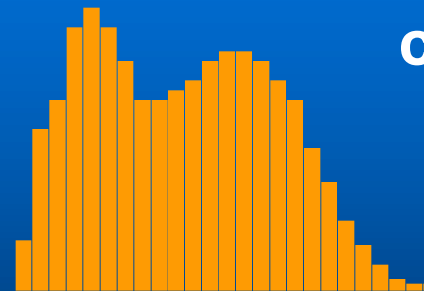
H : 58mm

cvH : 56%



H : 55mm

cvH : 50%



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CSIRO 1 Formula

$$H^* = 1.17L / (1 + P)$$

1 - P : PROBABILITY FIBRE will NOT BREAK

P = 0, H* = 1.17L (no breaks)

P = 1, H* = 1.17L / 2 (all fibres break)

$$P = e^y / (1 + e^y)$$

where y = f(RAW WOOL PROPERTIES)

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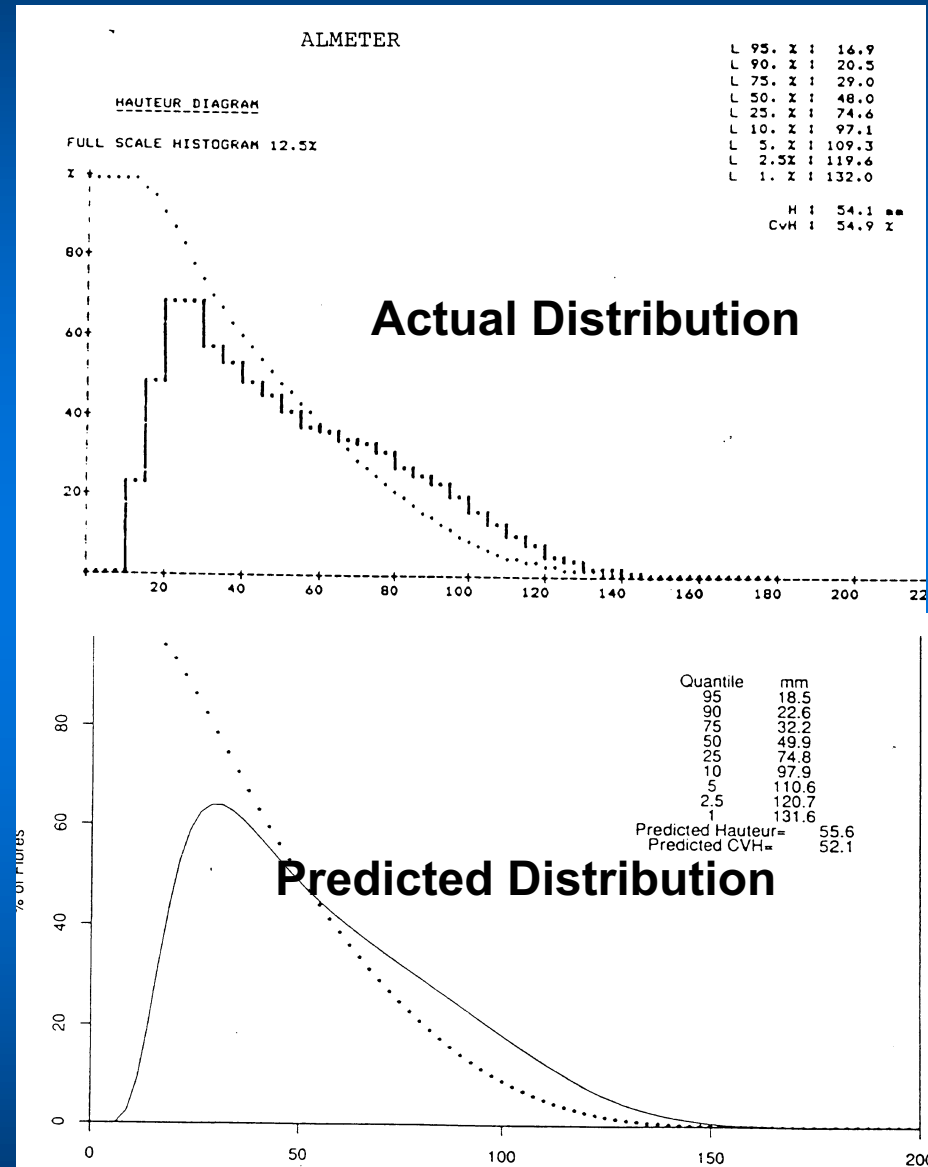
Wool



SiroHauteur

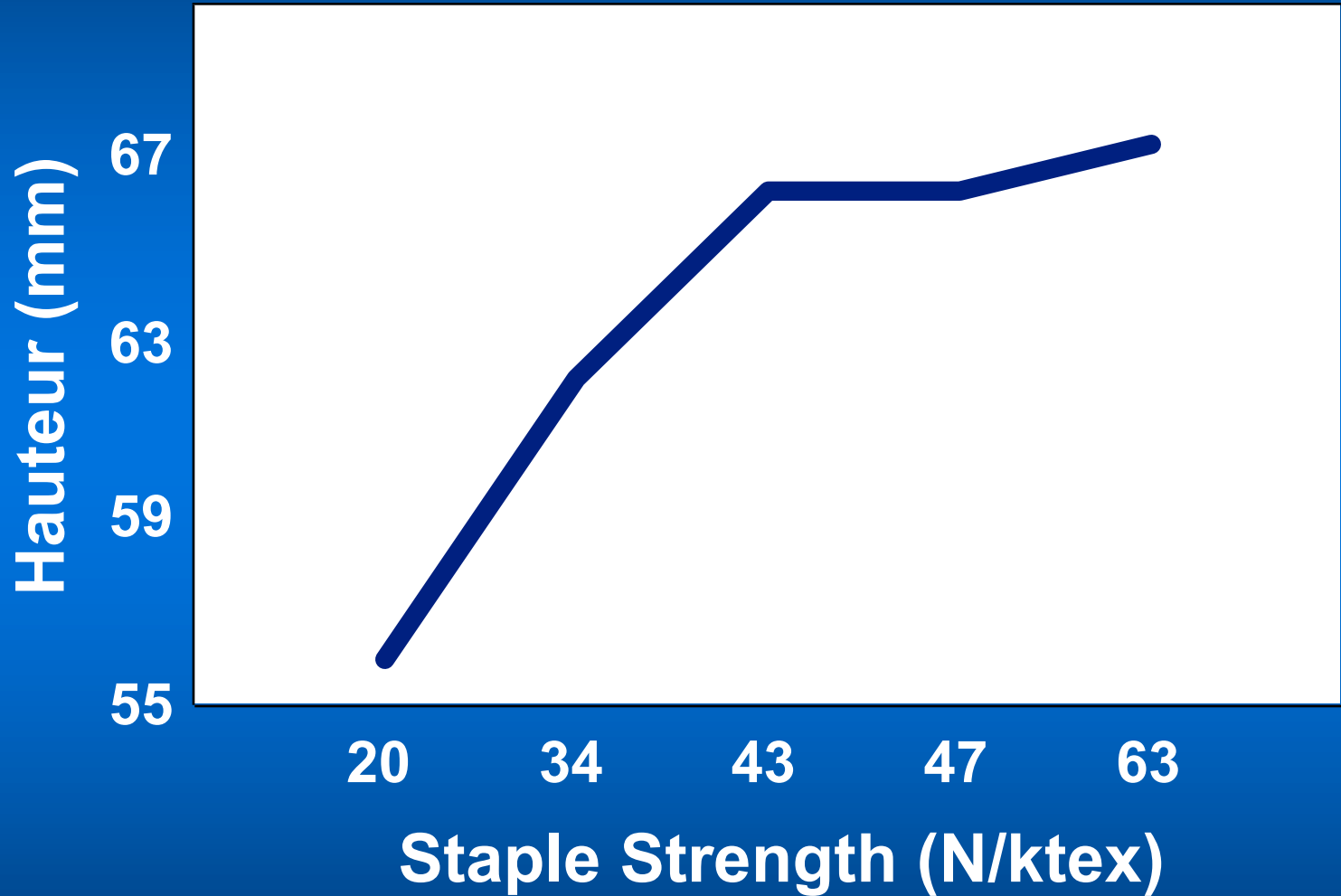
- predicts fibre length distribution
- 9 quantiles from almeter output
- fits smooth curve to fibre length distribution

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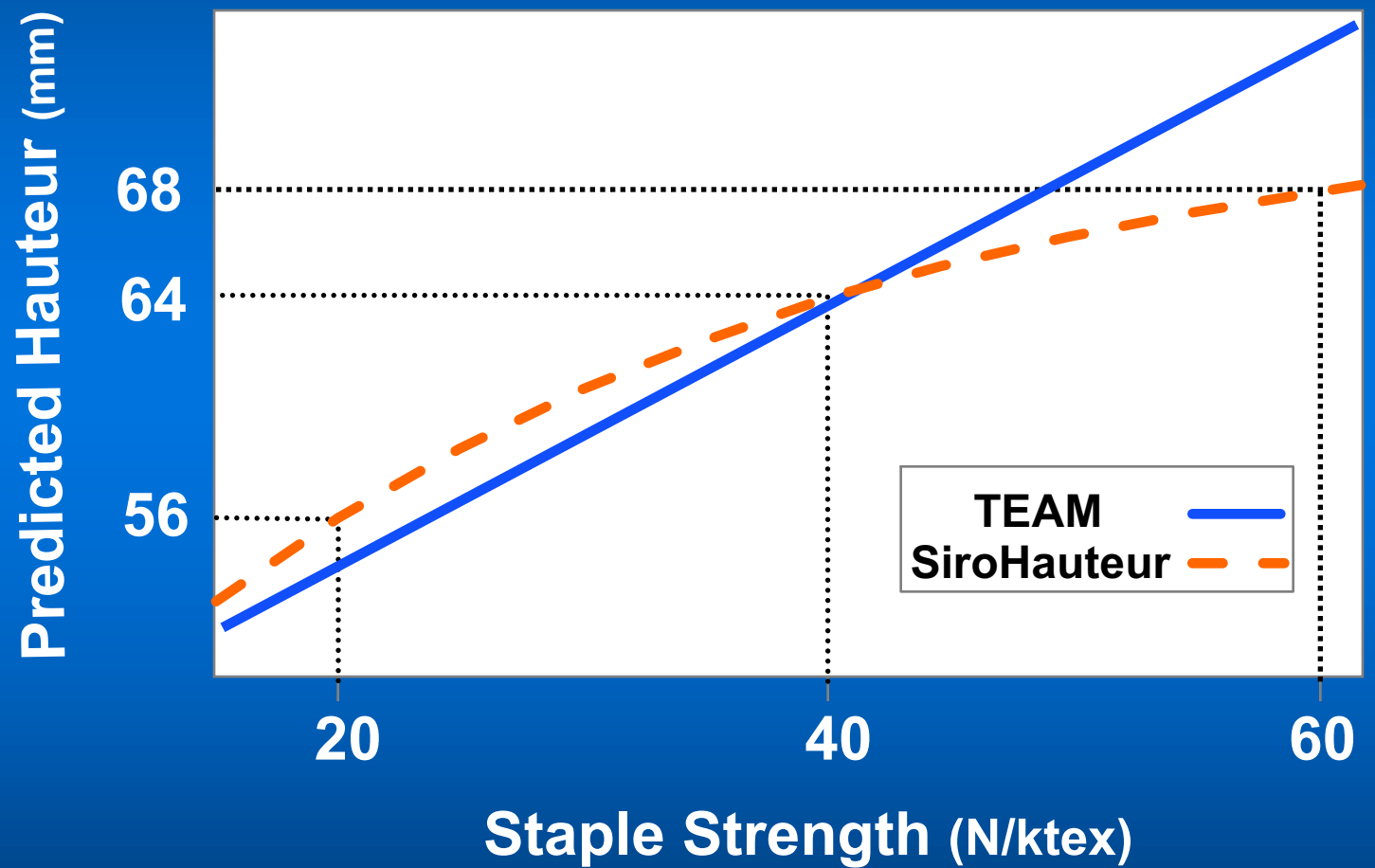
Effect of Staple Strength



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Effect of Staple Strength on Predicted Hauteur



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CSIRO Sale Lot formula (2nd generation)

- **SIROLAN TOPSPEC**

- LOTSpec
- FLCSpec

- **LOTSpec**

- Uses higher order terms (eg. SL2, SSxSL)
- non-linear relationships between predicted H and raw wool measurements

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Prediction Accuracy (mm)

[SD of (Actual - Predicted) Hauteur]

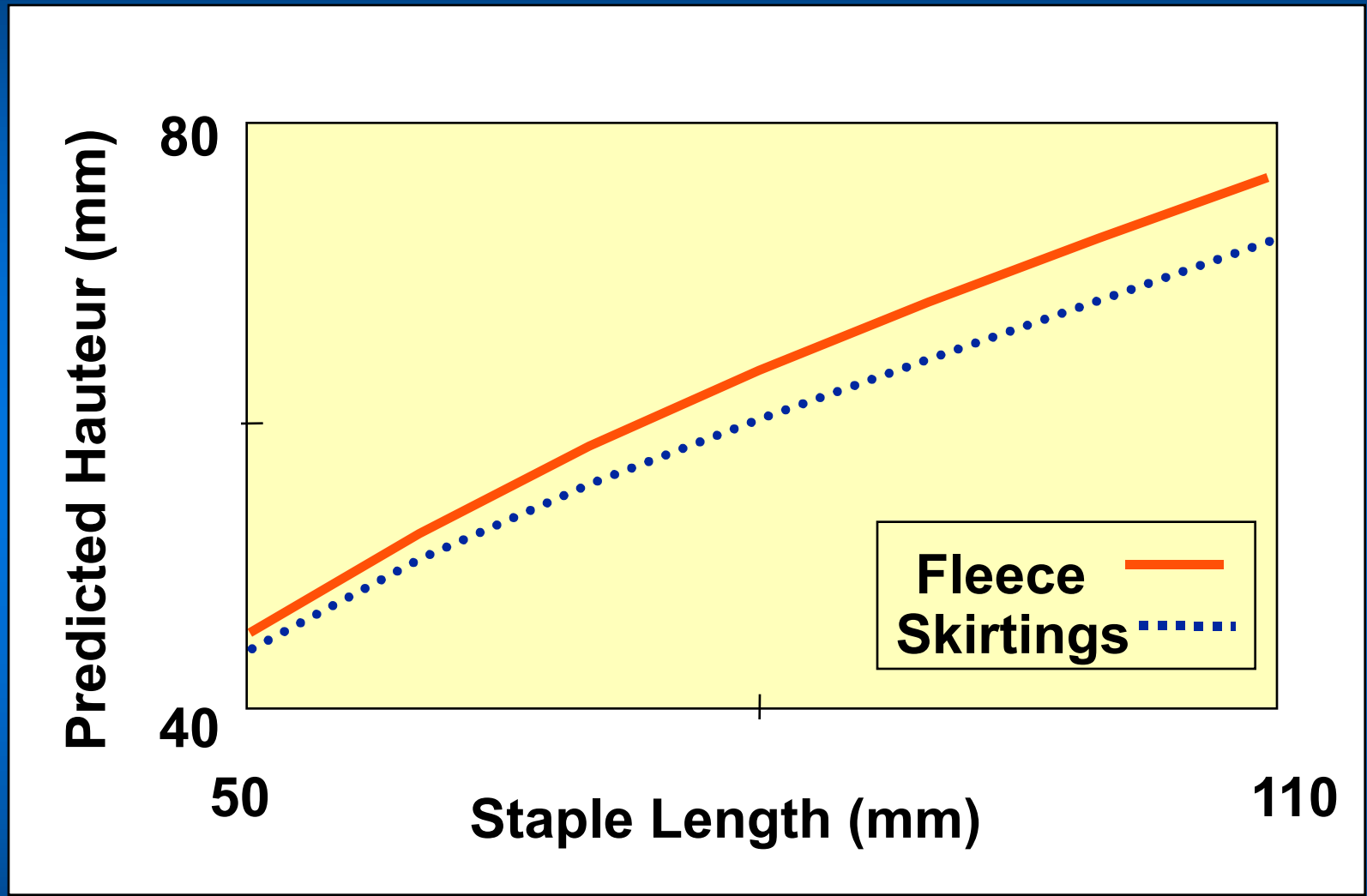
	400 sale lots	500 consignments
TEAM:	5.0 - 5.6	3.4
SiroHauteur:	4.5	
LOTSpec:	4.5	

- Sale lots predicted less accurately than consignments
- CSIRO formulae slightly better than TEAM for sale lots



Effect of Wool Category

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Improvement in Prediction

Standard Deviation (mm)

One Formula for all *Individual Group Formulae*

Merino	4.1	4.1
Crossbred	5.4	4.5
Fleece	4.1	4.1
Skirtings	3.2	2.9
Best	4.5	4.2
Good	4.0	3.9

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