

AFIS and HVI Maturity Measurement Revised Calibration

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AFIS and HVI Maturity Measurement

Background

- Maturity as a measured parameter was introduced in AFIS and HVI since 1992 and 1998 respectively.
- The reference for the AFIS measurement is image analysis (IA).
- The IA data from 36 cottons, provided by Texas Tech in late 1980's & measured by USDA-ARS (SRRC), was used to establish AFIS maturity and its calibration.
- The reference for the HVI maturity measurement is AFIS
- Using image analysis is a direct measurement of this property, however, variations in results can be expected due to the small sample size and distributions within a fiber population.

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Introduction

- As an effort to improve the accuracy and the range of reference data, a sample set of 104 cottons was collected and tested thoroughly via image analysis establishing maturity values
- Comparison tests on AFIS and HVI, while showed good correlation, indicated a narrower range for this measurement reflecting the characteristics of the original reference samples
- This point was further confirmed in presentation by Dr. Jim Rogers of USDA SRRC in the previous CSITC Task Force meeting.

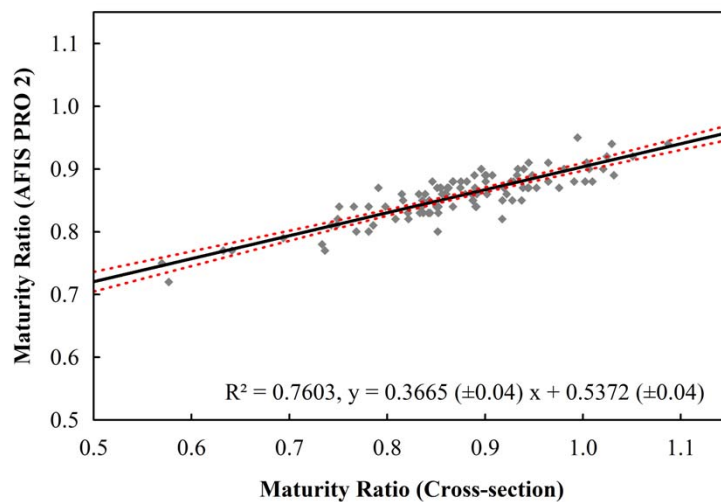
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Dr. Rogers Study Results



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Study Methodology

- The purpose of the study was to take the IA data for the 104 cottons and create a new calibration for AFIS and HVI to improve the maturity measurement range
- New calibrations were created for the AFIS PRO2 and HVI 1000 and applied in order to compare the their respective maturity measurements to IA

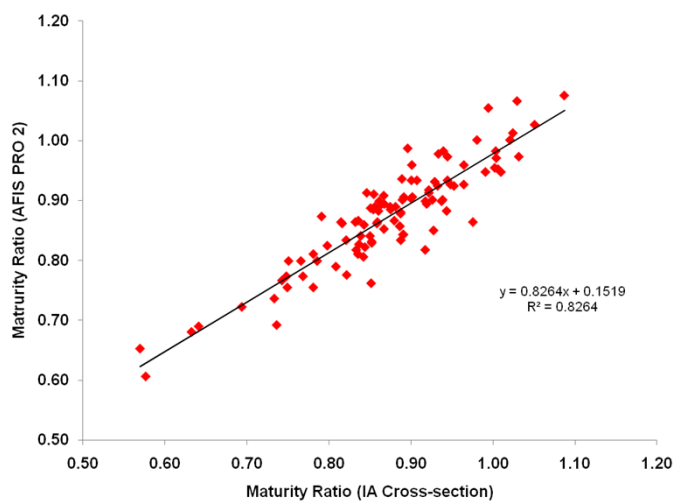
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AFIS PRO 2 results (correlation to IA results)



- Correlation improved from $R^2 = 0.76$ to $R^2 = 0.83$
- Likewise, the measurement range improved from 0.23 to **0.47**
- The range for IA is 0.51

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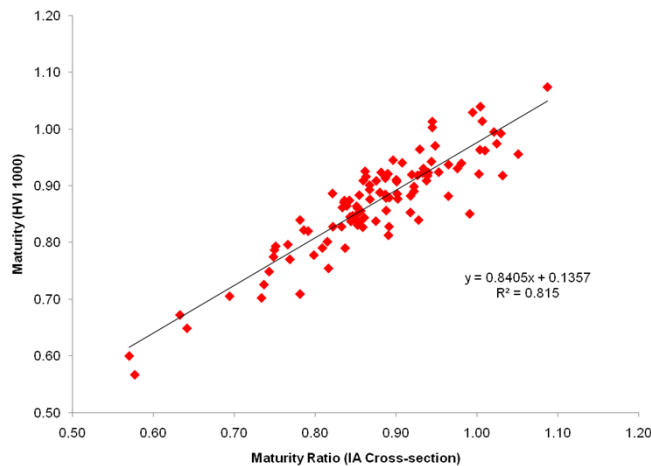
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HVI 1000 results (correlation to IA results)



- Correlation improved from $R^2 = 0.73$ to $R^2 = 0.82$
- Likewise, the measurement range improved from 0.09 to 0.50
- The range for IA is 0.51

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Conclusions

- Using the IA maturity data from the 104 cottons, new maturity calibrations were devised & implemented for AFIS PRO 2 and HVI 1000.
- With the new calibrations, the correlations of AFIS PRO 2 and HVI 1000 to IA maturity data is further improved.
- Additionally, the measurement range for this measurement increased significantly to a similar range of the IA maturity data.

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AFIS/HVI Maturity

Acknowledgements

- We would like to thank Dr. Eric Hequet and his team for the work they have performed on this subject and the past support provided to USTER.
- This new version of SW will be sent to Dr. Hequet for further evaluation of this measurement on his AFIS PRO 2 and HVI 1000, and is already incorporated in the next SW revisions for these instruments.

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