

New Official Moisture Technology Implementation Briefing

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NAEGA-FGIS Regional Meeting

Destrehan, LA

April 24, 2012

What is UGMA?

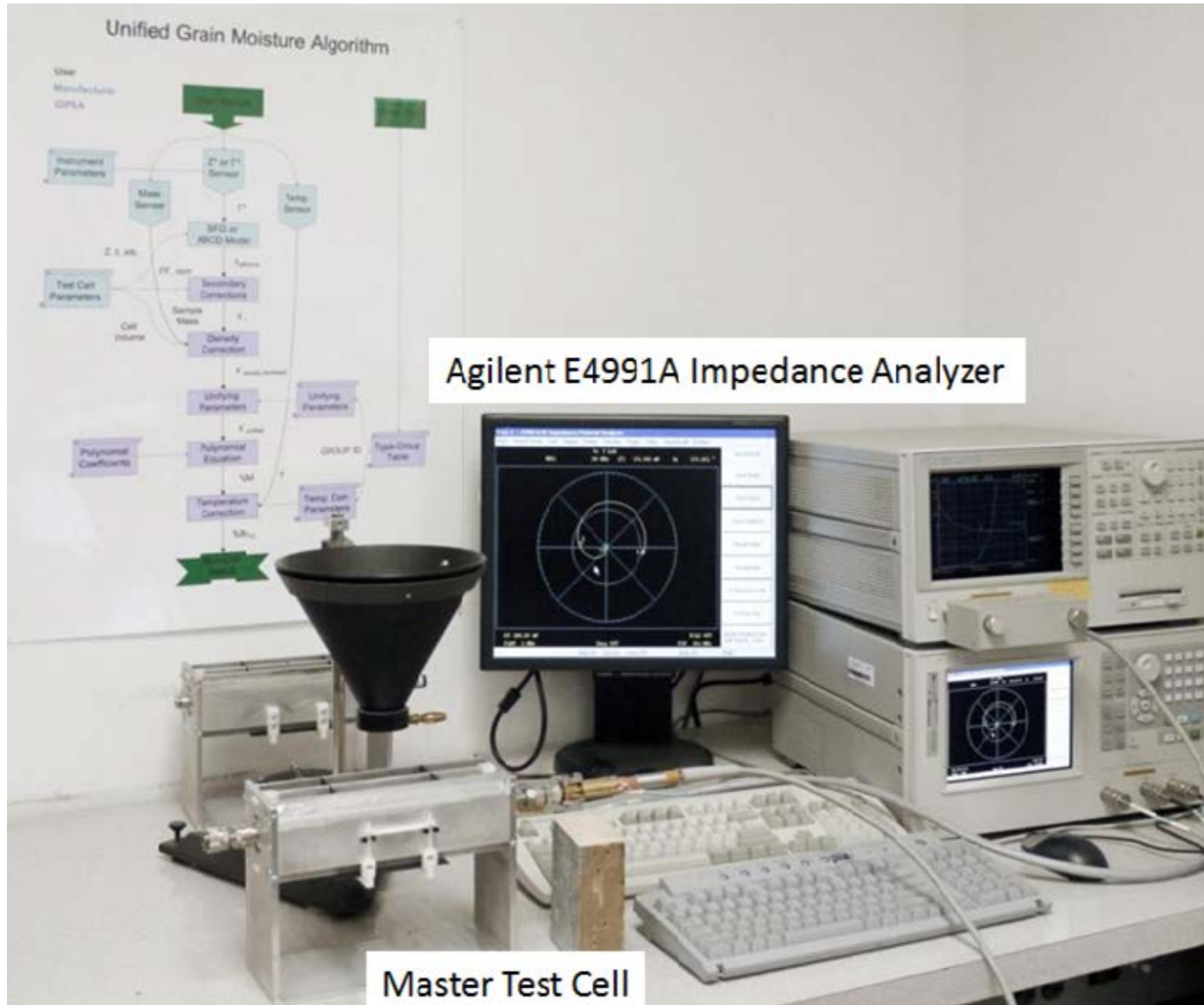
FGIS's **U**nified **G**rain **M**oisture **A**lgorithm

1. Measure dielectric constant at frequency near 149 MHz
2. Density correction
3. Unifying parameters
4. Single calibration equation
5. Temperature correction
6. Gives accurate moisture results

Why Change to UGMA?

1. Better accuracy for all grain types
2. Much better accuracy on corn
 - Special test weight correction
3. Less affected by “green grain” conditions
4. Faster
5. More stable calibrations
6. Wider temperature ranges
7. Allow competition for Official moisture meters

UGMA Master System



FGIS-Certified UGMA-Compatible Moisture Meters

Dickey-john GAC 2500UGMA



Perten AM 5200-A



FGIS's Basic Definition of Equivalency

1. Same technology
2. Very close agreement among types as well as units of a type
3. Same calibrations and standardization processes

UGMA-Compatibility Criteria (1)

1. NTEP Certification
2. Documented & stable production processes
3. Measurement frequency
4. Standardized test cell design
5. Standardized loading method
6. Standardized measurements
 - Sample dielectric constant
 - Sample mass
 - Sample temperature

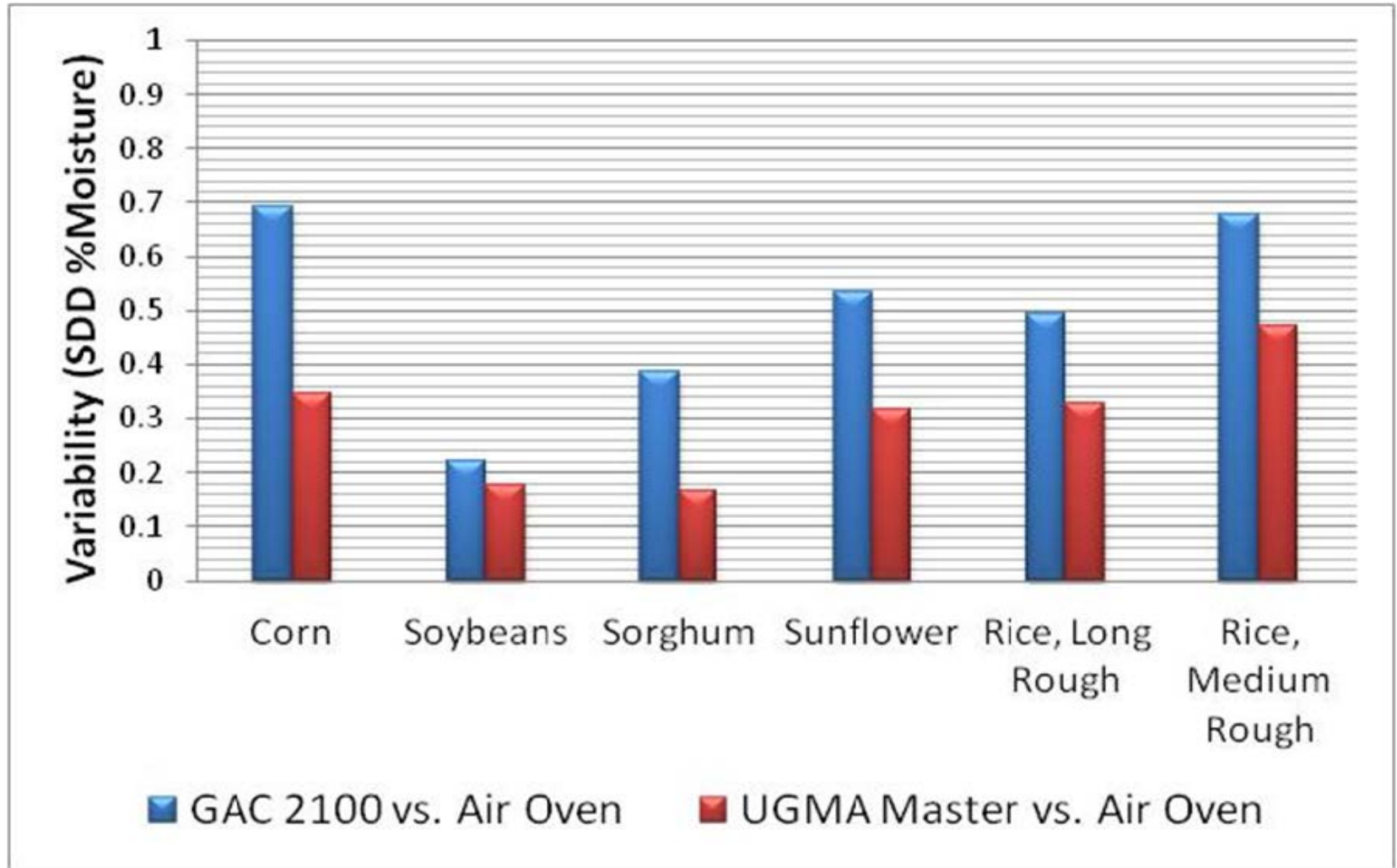
UGMA-Compatibility Criteria (2)

1. Tight tolerances specified for individual subsystems as well as moisture results
2. Must use specified mathematics
3. Units' agreement with FGIS Master system must meet tolerances in FGIS Regulations
 - $\pm 0.05\%$ Moisture for Headquarters Standard units
 - $\pm 0.15\%$ Moisture for other Official units
 - Mean difference on medium-moisture HRWW

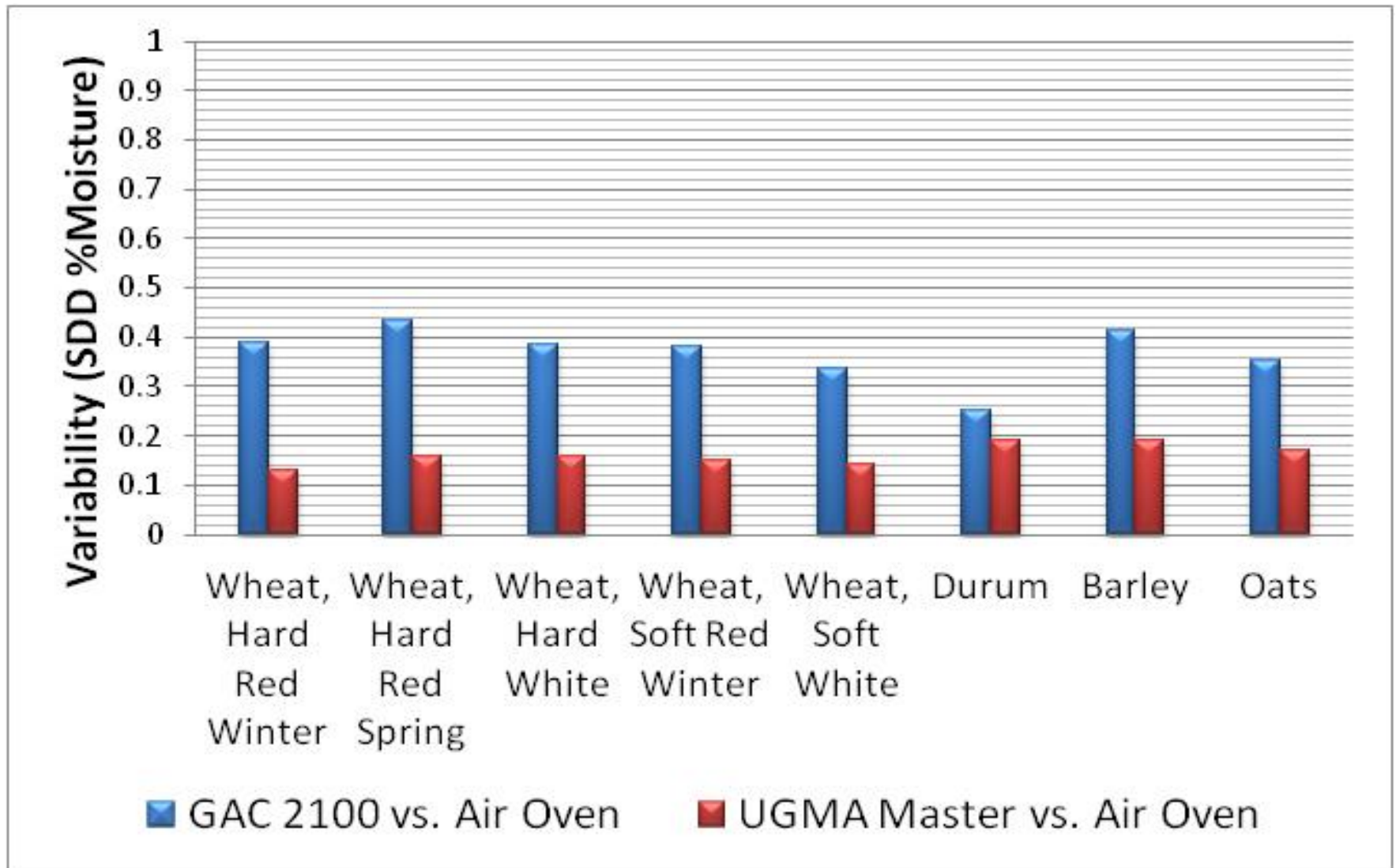
UGMA-Compatibility Criteria (3)

1. All UGMA-Compatible models must be able to use the same check testing process.
2. A simple check testing process must ensure performance on all grains over full moisture ranges.
3. Instruments must provide for efficient means of entering calibrations.
4. Instruments must provide standardized output data stream for printing or networking.

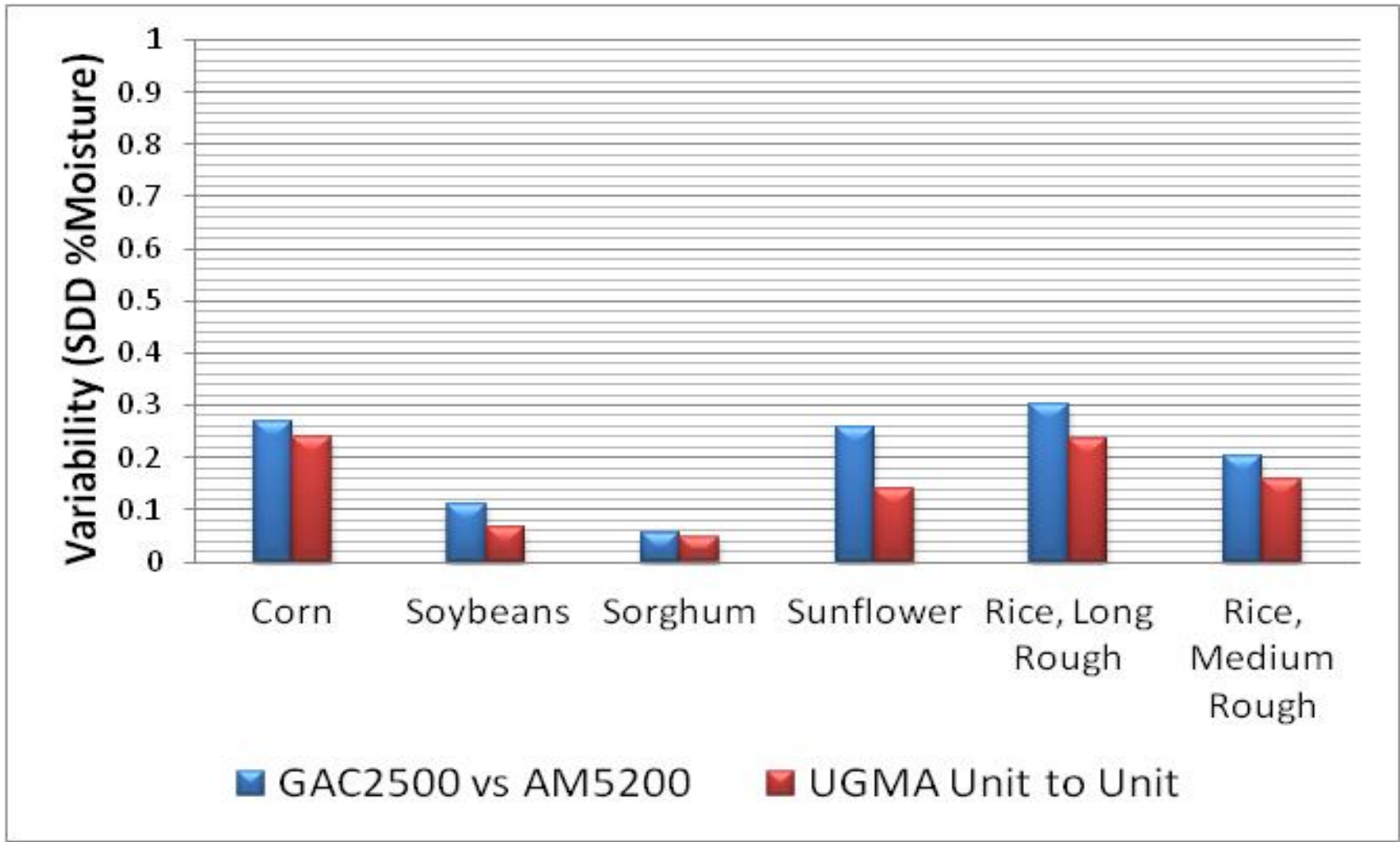
Improved Accuracy of UGMA



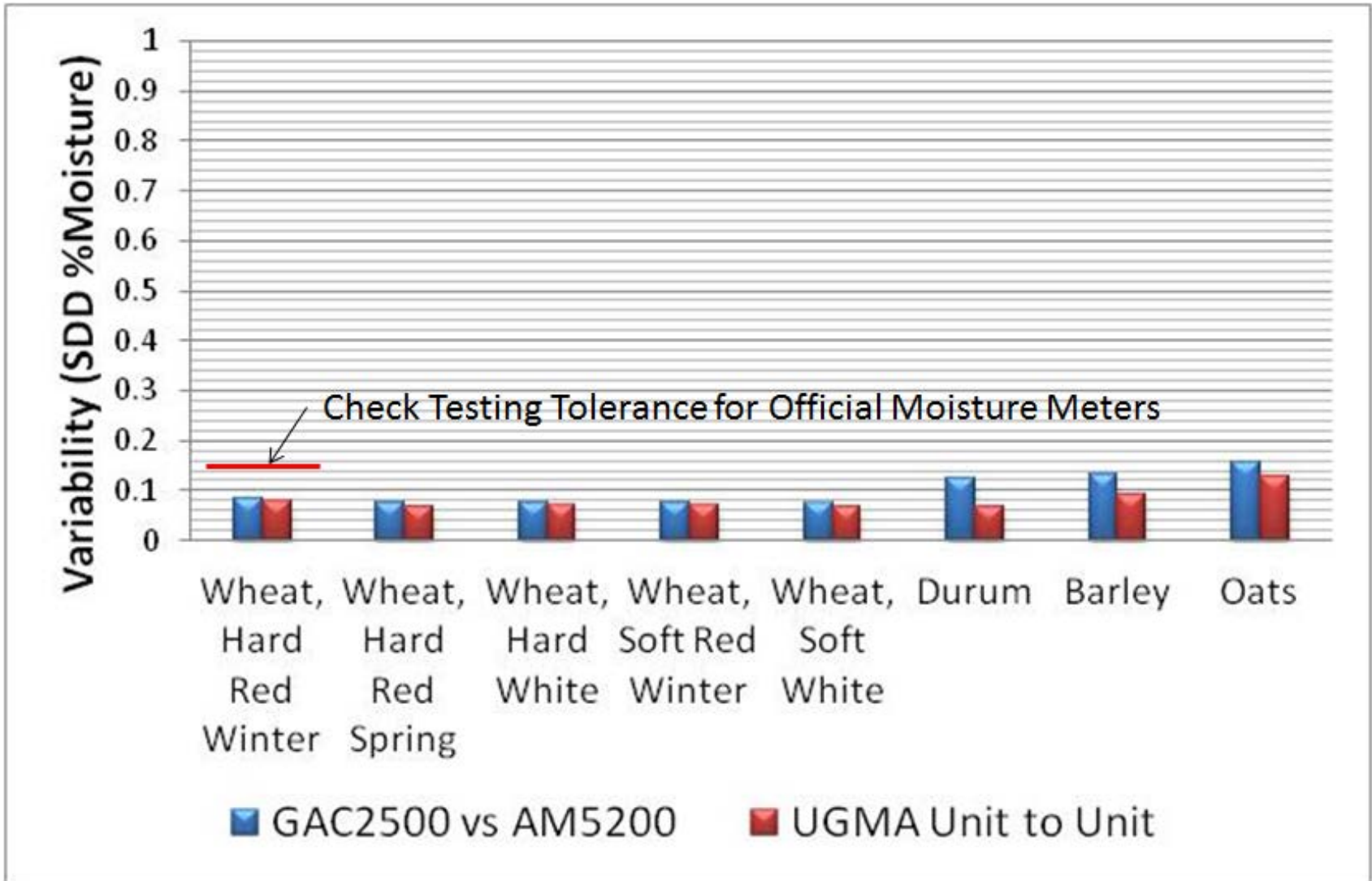
Improved Accuracy of UGMA



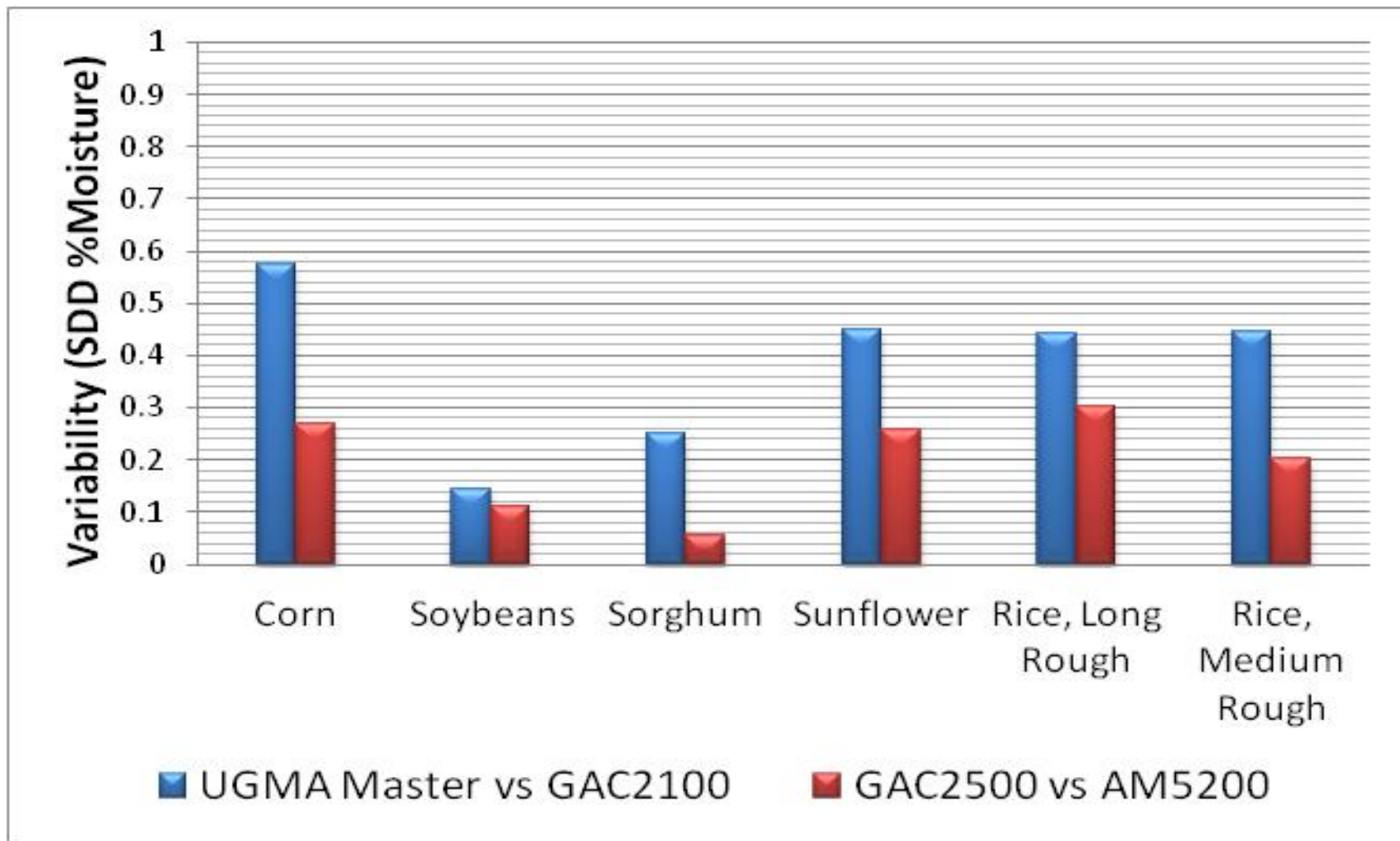
Excellent Agreement Between UGMA Models



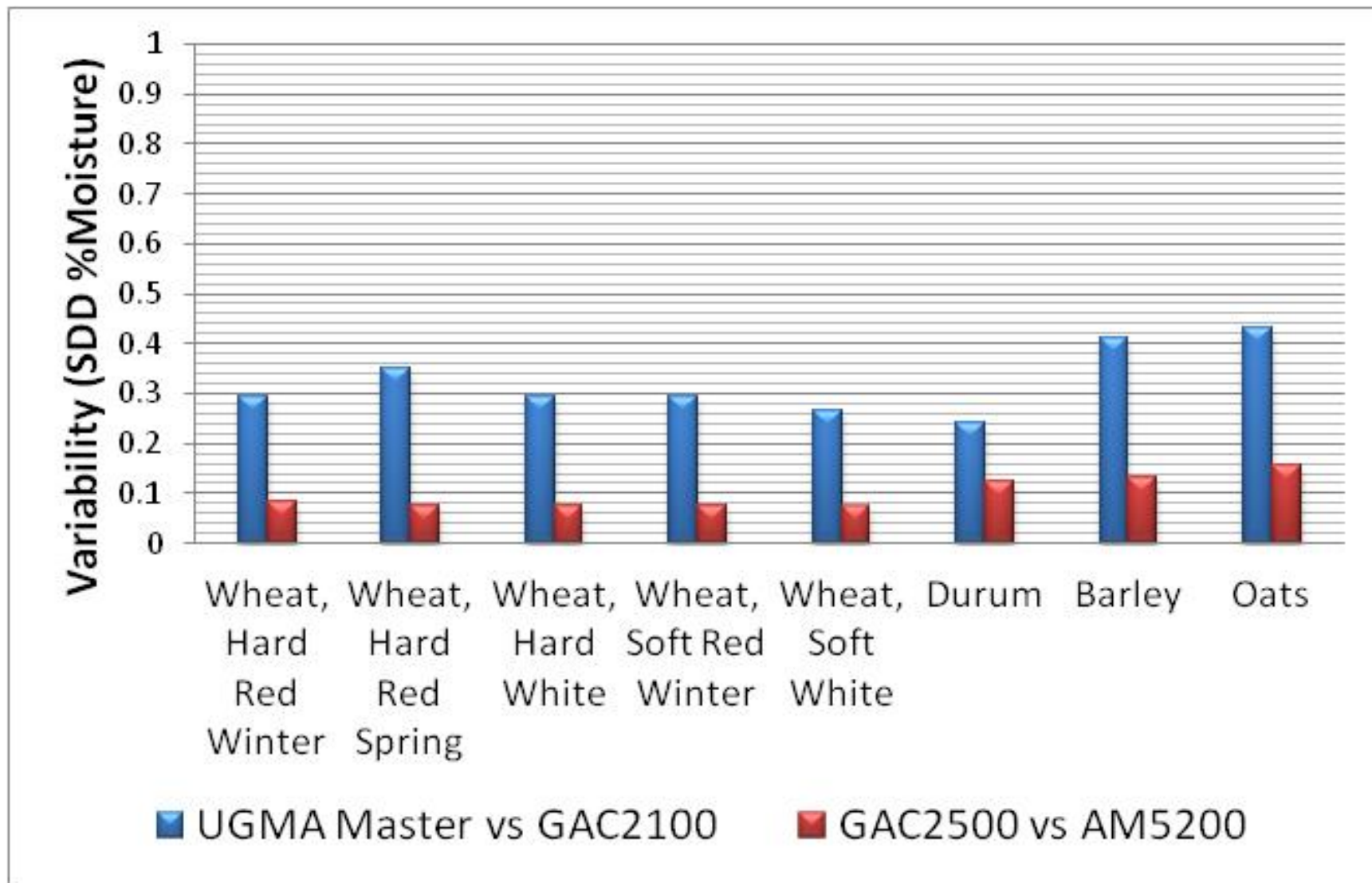
Excellent Agreement Between UGMA Models



Far Better Agreement Than Between Different Technologies



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Summary

1. UGMA developed by FGIS to meet grain industry demands for higher accuracy and consistency and competition among Official moisture meter providers.
2. UGMA-Compatible moisture meters have been made equivalent ***by design*** and confirmed equivalent by GIPSA's engineering review.
3. FGIS, Official agencies, and grain handlers can confidently use all FGIS-Certified UGMA-Compatible moisture meter models interchangeably.



United States Department of Agriculture
Agricultural Marketing Service
Federal Grain Inspection Service