UGMA Moisture Meter Performance

This document contains plots that show the performance for instruments based on GIPSA’s Unified Grain Moisture Algorithm (UGMA). The data were collected on the GIPSA’s UGMA Master System for the crops listed on each plot. The differences are instrument moisture results minus USDA-GIPSA air oven moisture results.

The plots show data for the spring/summer and fall harvest grain groups. The specific grain types included in each grain group are listed below the grain group title of each plot. The “mean” value is the average difference between the UGMA results and the air oven results for all samples on the plot. The Standard Deviation of Differences (SDD) value is a measure of the variability of differences between the UGMA results and the air oven results. Approximately two thirds of UGMA results were within +/- the listed SDD value for that grain group.

The y-axis range for all plots is +/- 2 % moisture difference, and the x-axis is the % moisture (air oven value).

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1. Barley Grain Group 2012-2019

Barley: 2012 - 2019

Samples: 267, Mean: 0, SDD: 0.22

2. Durum Grain Group 2015-2019

Durum: 2015 - 2019

Samples: 151, Mean: 0.09, SDD: 0.16
3. Oats Grain Group 2015-2019

Oats: 2015 - 2019

Samples: 97, Mean: 0, SDD: 0.21

4. Hulless Oats Grain Group Year 2012-2019

Hulless Oats: 2012 - 2019

Samples: 10, Mean: -0.19, SDD: 0.25
5. Hard wheat Grain Group 2015-2019

Hard Wheat: 2015 - 2019

Samples: 650, Mean: 0.05, SDD: 0.2


Soft Wheat: 2015 - 2019

Samples: 458, Mean: 0, SDD: 0.2

Triticale & Rye: 2011 - 2019

Samples: 33, Mean: 0.05, SDD: 0.16

Air Oven Moisture (%)
8. Corn Grain Group 2015-2019

Corn: 2015 - 2019

Samples: 505, Mean: 0.01, SDD: 0.3


Sorghum: 2015 - 2019

Samples: 147, Mean: 0, SDD: 0.21
10. Soybean Grain Group 2015-2019

**Soybeans: 2015 - 2019**

Soybeans

Samples: 319, Mean: 0.09, SDD: 0.16

![Graph showing Soybeans data with UGMA-Air Oven (%) vs Air Oven Moisture (%).]


**Sunflower: 2014 - 2019**

Sunflower, Confectionary Sunflower

Samples: 198, Mean: -0.01, SDD: 0.34

![Graph showing Sunflower data with UGMA-Air Oven (%) vs Air Oven Moisture (%).]

Rice, Long Rough: 2015 - 2019

Long Grain Rough Rice

Samples: 326, Mean: 0.1, SDD: 0.33


Rice, Medium Rough: 2015 - 2019

Med Grain Rough Rice

Samples: 277, Mean: 0.08, SDD: 0.33
14. Short Grain Rough Rice Group 2014-2018

Short Grain Rough Rice Group: 2014 - 2018

Samples: 147, Mean: 0, SDD: 0.56

15. Brown Rice Group 2009-2018

Brown Rice Group: 2009 - 2018

Samples: 101, Mean: 0.07, SDD: 0.28
16. Long & Medium Milled Rice Group 2008-2019

Rice, Long & Medium Milled: 2008 - 2019

Long Grain Milled Rice, Med Grain Milled Rice

Samples: 113, Mean: 0.06, SDD: 0.21

17. Short Grain Milled Rice Group 2012

Short Milled Rice Group Year: 2012

Brewers Milled, Screenings Milled, Second Head Milled, Short Grain Milled

Samples: 58, Mean: 0, SDD: 0.13
18. Parboiled Rice Group 2012 - 2016

Rice, Parboiled: 2012 - 2016
Long Grain Brown Rice (Parboiled), Long Grain Milled Rice (Parboiled),
Med Grain Milled Rice (Parboiled), Second Head Milled Rice (Parboiled)

Samples: 54, Mean: -0.02, SDD: 0.2

19. Canola Grain Group 2008-2018

Canola Grain Group: 2008 - 2018
Canola, Rapeseed

Samples: 42, Mean: 0, SDD: 0.32
20. Bean 1 Grain Group 2009-2018

Bean 1 Grain Group: 2009 - 2018
Blackeye, Cranberry, Pink, Pinto, Split Pea

Samples: 182, Mean: 0.01, SDD: 0.22


Beans 2: 2008 - 2019
Baby Lima Beans, Garbanzo Beans, Small Red Beans

Samples: 215, Mean: -0.02, SDD: 0.33
22. Bean 3 Grain Group 2009-2018

Bean 3 Grain Group: 2009 - 2018

Black, Great Northern, Large Lima

Samples: 89, Mean: 0, SDD: 0.22

23. Bean 4 Grain Group 2009-2012

Bean 4 Grain Group: 2009 - 2012

Peas, Small White

Samples: 51, Mean: 0, SDD: 0.11
24. Bean 5 Grain Group 2011-2019

**Beans 5: 2011 - 2019**

Kidney Beans, Lentils

Samples: 86, Mean: 0, SDD: 0.24


**Peas: 2011 - 2019**

Mottled Peas, Smooth Dry Peas, Wrinkled Dry Peas

Samples: 118, Mean: 0.03, SDD: 0.23


Brown, Yellow

Samples: 28, Mean: 0.02, SDD: 0.25


Oriental

Samples: 17, Mean: 0.05, SDD: 0.18
28. Flaxseed Grain Group 2010-2018

**Flaxseed Grain Group: 2010 - 2018**

- **Samples:** 23
- **Mean:** -0.05
- **SDD:** 0.16

![Flaxseed Graph]

29. Safflower Grain Group 2008-2011

**Safflower Grain Group: 2008 - 2011**

- **Samples:** 36
- **Mean:** 0
- **SDD:** 0.21

![Safflower Graph]
30. Buck Wheat Grain Group 2012-2013

**Buckwheat: 2012 - 2013**

**Buckwheat, Buckwheat Groats**

Samples: 27, Mean: 0.01, SDD: 0.22


**Popcorn Grain Group: 2012 - 2015**

Popcorn

Samples: 75, Mean: 0.09, SDD: 0.19