



April 11, 2012; 2PM CDT

<https://www1.gotomeeting.com/register/627261664>

The Bigger Picture: Challenges into the Future

Charles R. Hurburgh

Professor, Agricultural Engineering

and many others

March 4, 2012



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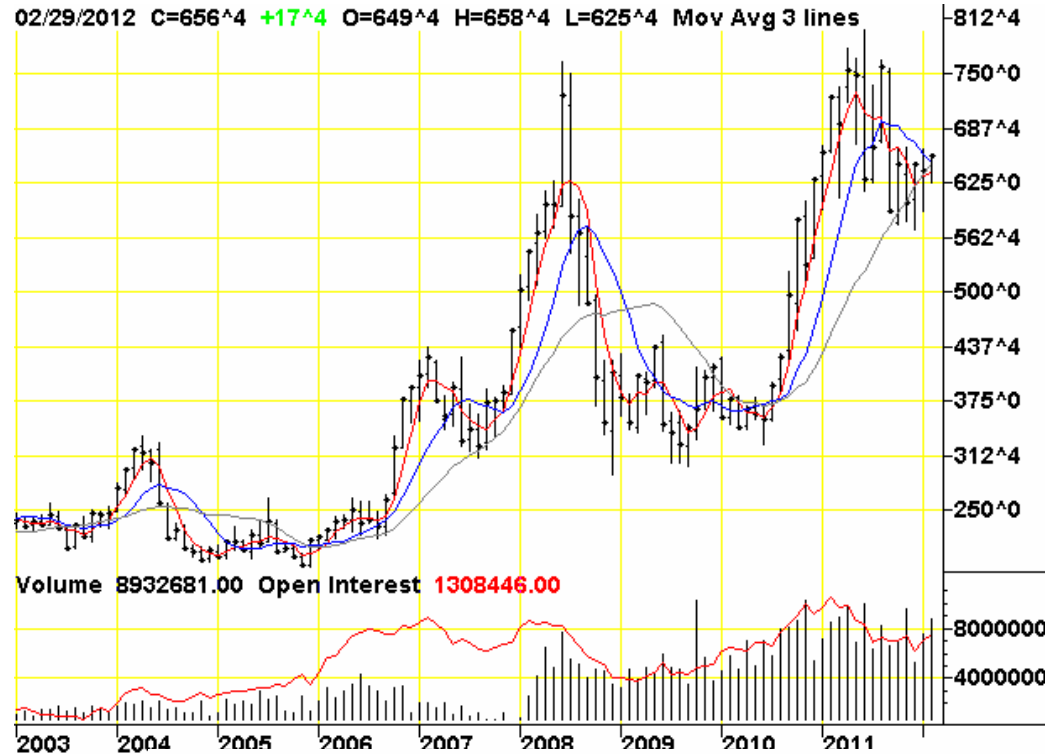


Large Challenges

- Productivity and Demand for Resources
- Technology
- Standard of Living/Consumer Issues
- Weather Variability
- Work Force Turnover

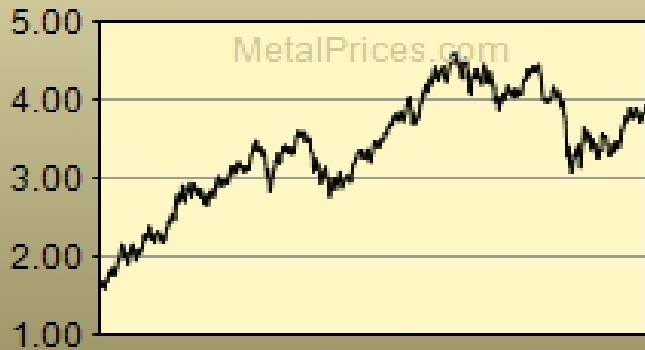
Grains Examples and What They mean for You

Productivity-Demand



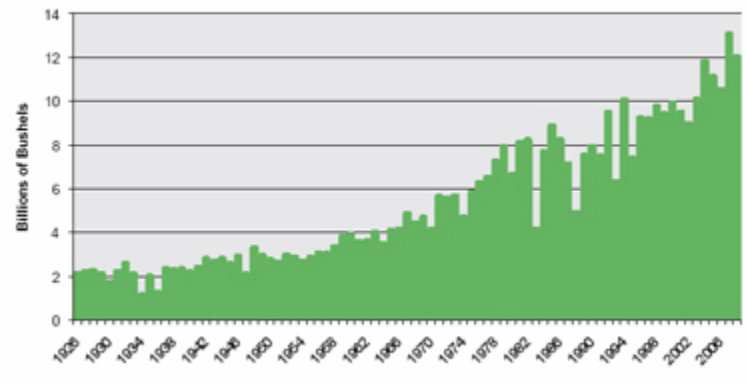
arch © 1997

LME Copper Settlement 3 Years - \$/LB



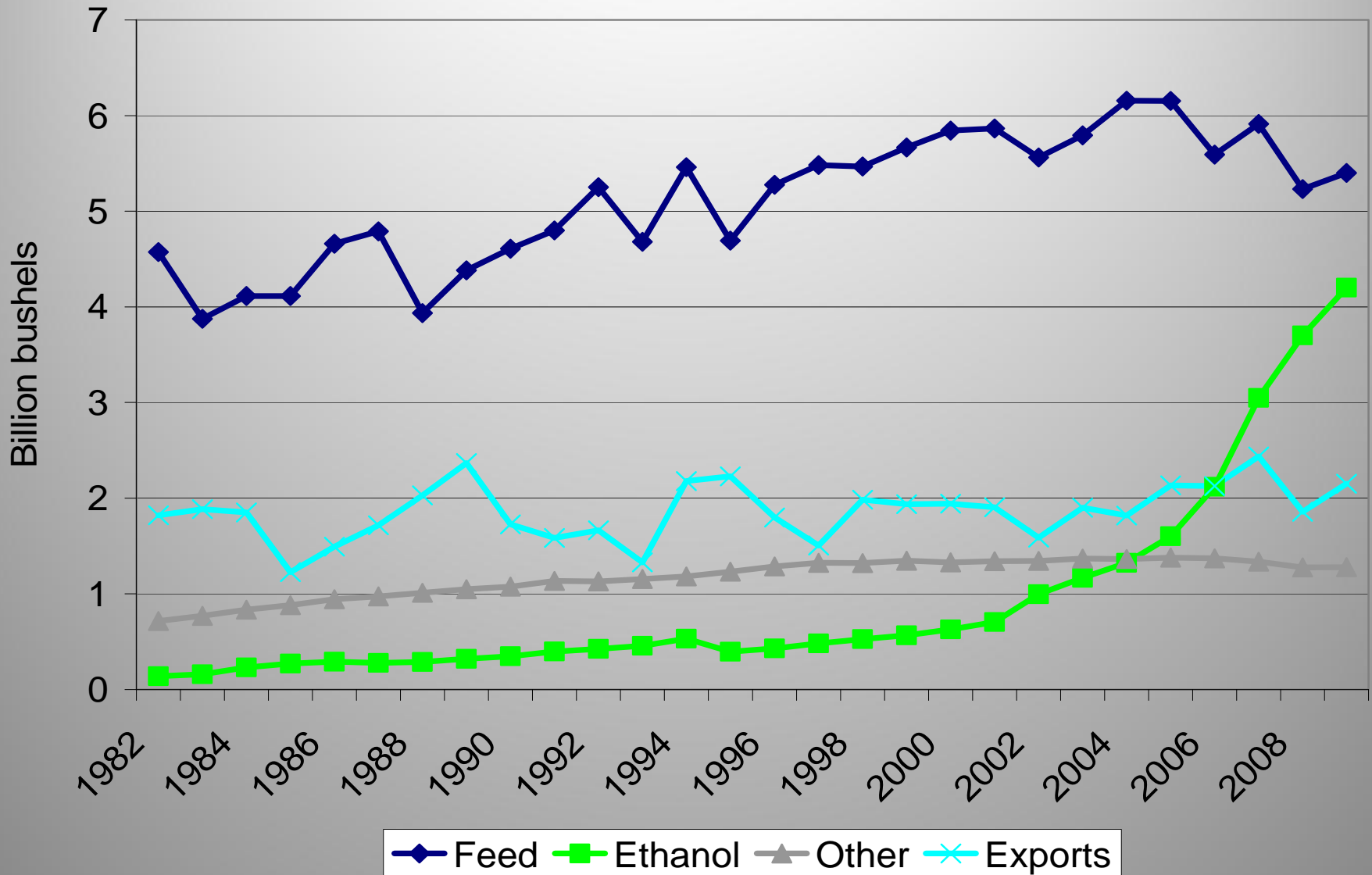
04 Mar, 2009 - 02 Mar, 2012

U.S. Corn Production

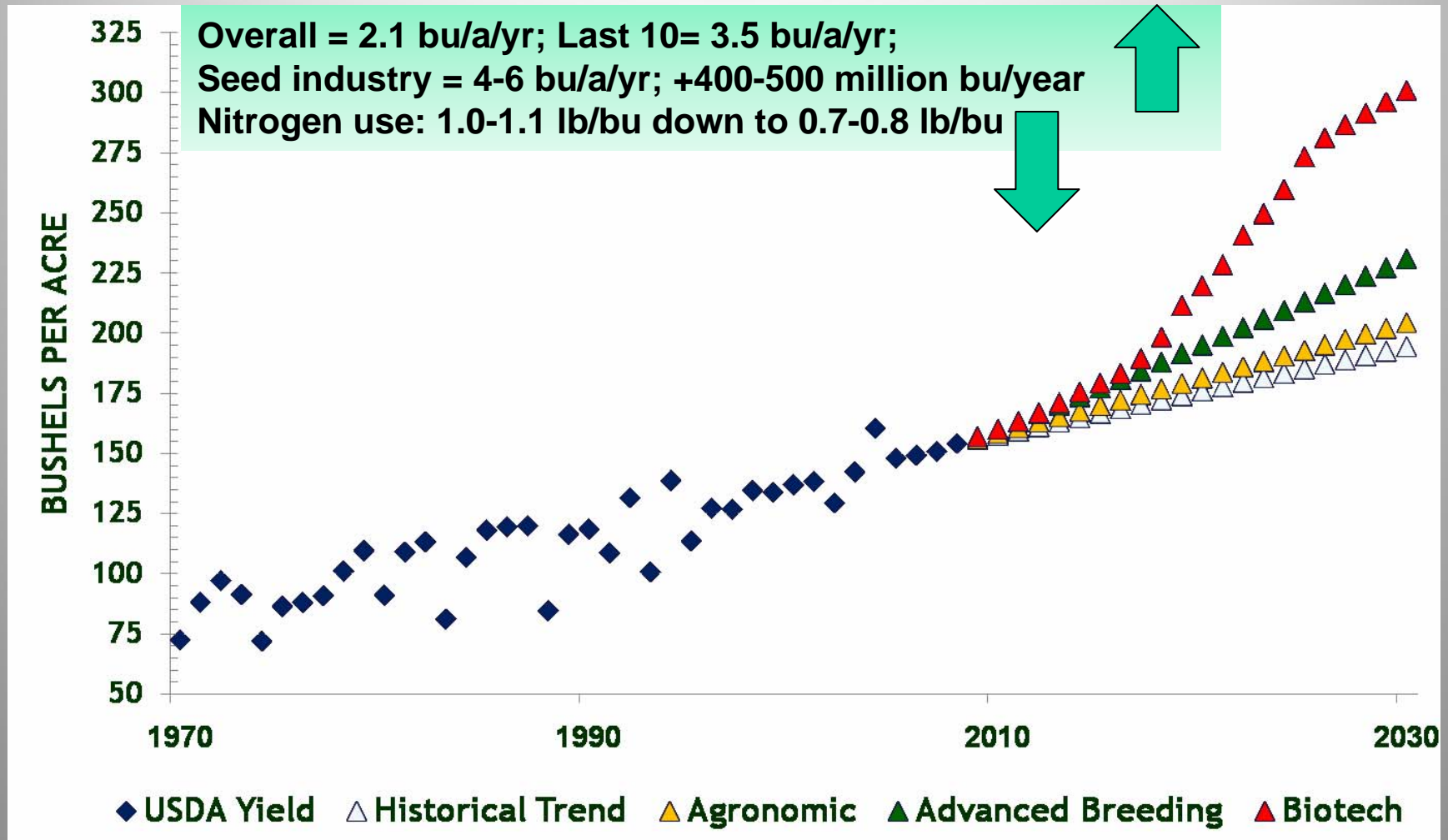


Source: U.S. Dept. of Agriculture, Economic Research Service

Corn Use



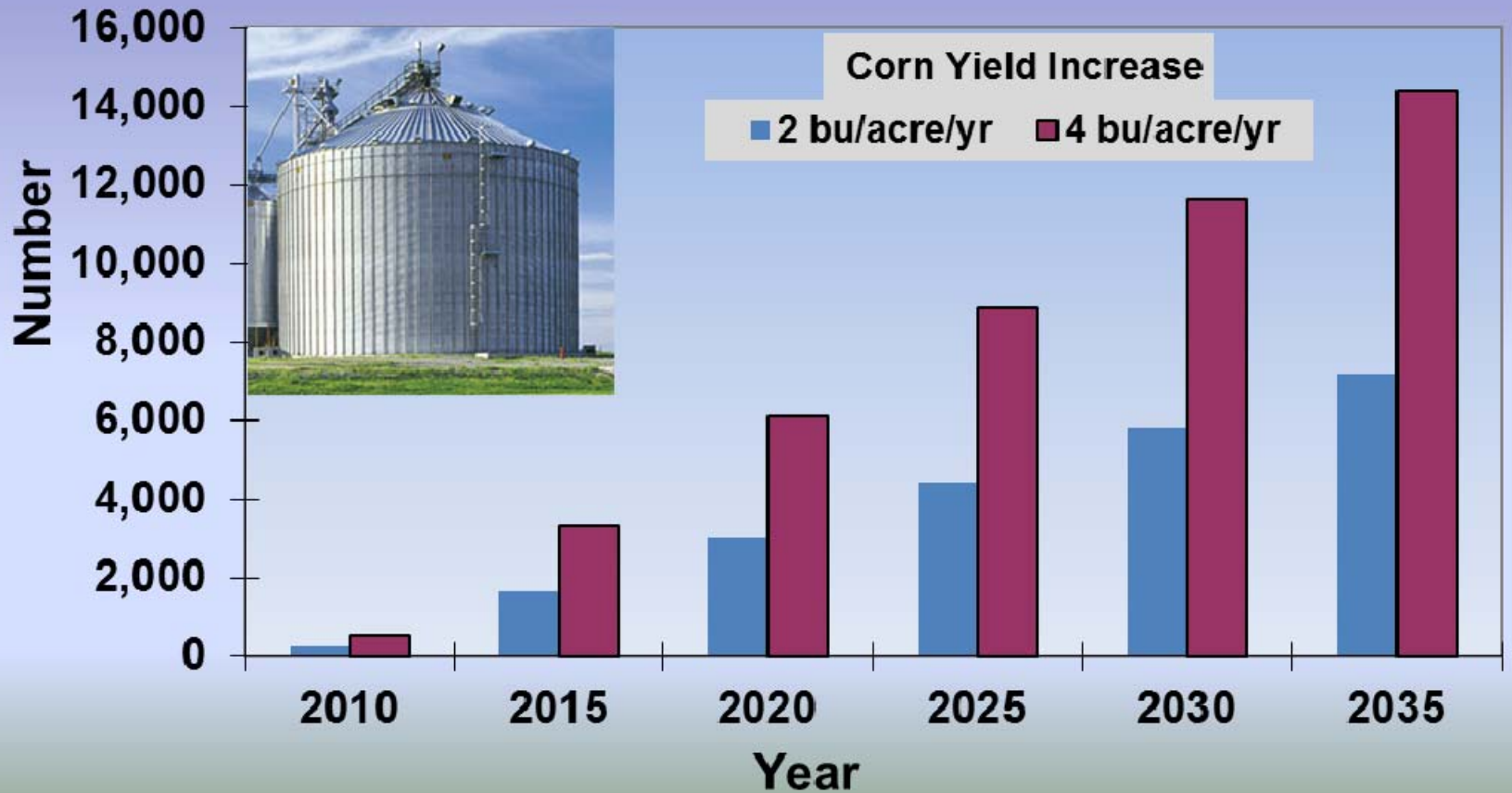
Corn Yield Potential



Source: Monsanto, June 2010

New Corn Storage as "105s"

"105" = 650,000 bu, 90 MM acres of corn, Base 2008



Technology: New Moisture Meter



GIPSA use
By 8/1/2012 for fall
grains
~ 100 GIPSA meters
~ 300 agency meters

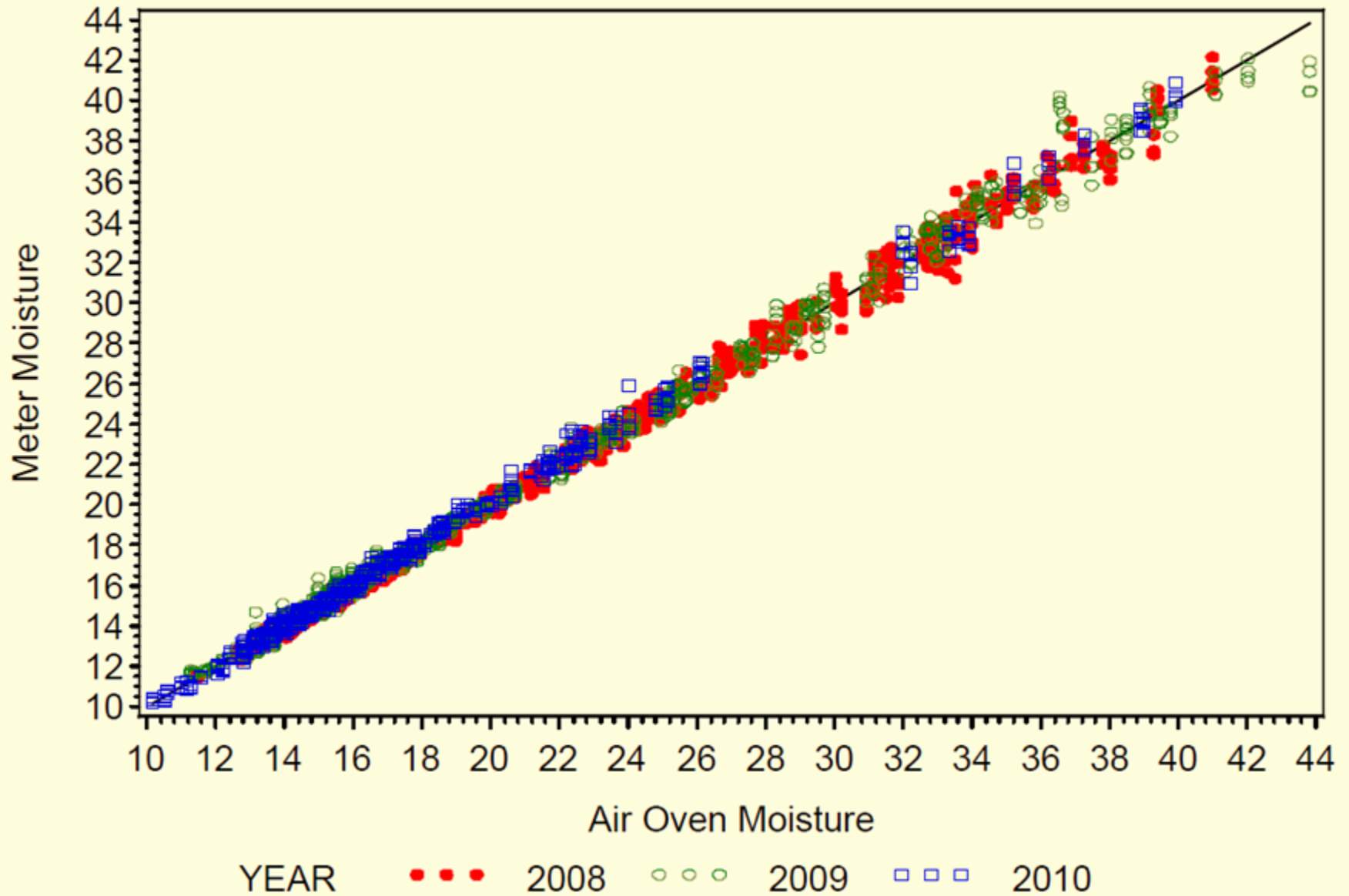


149 mhz, UGMA



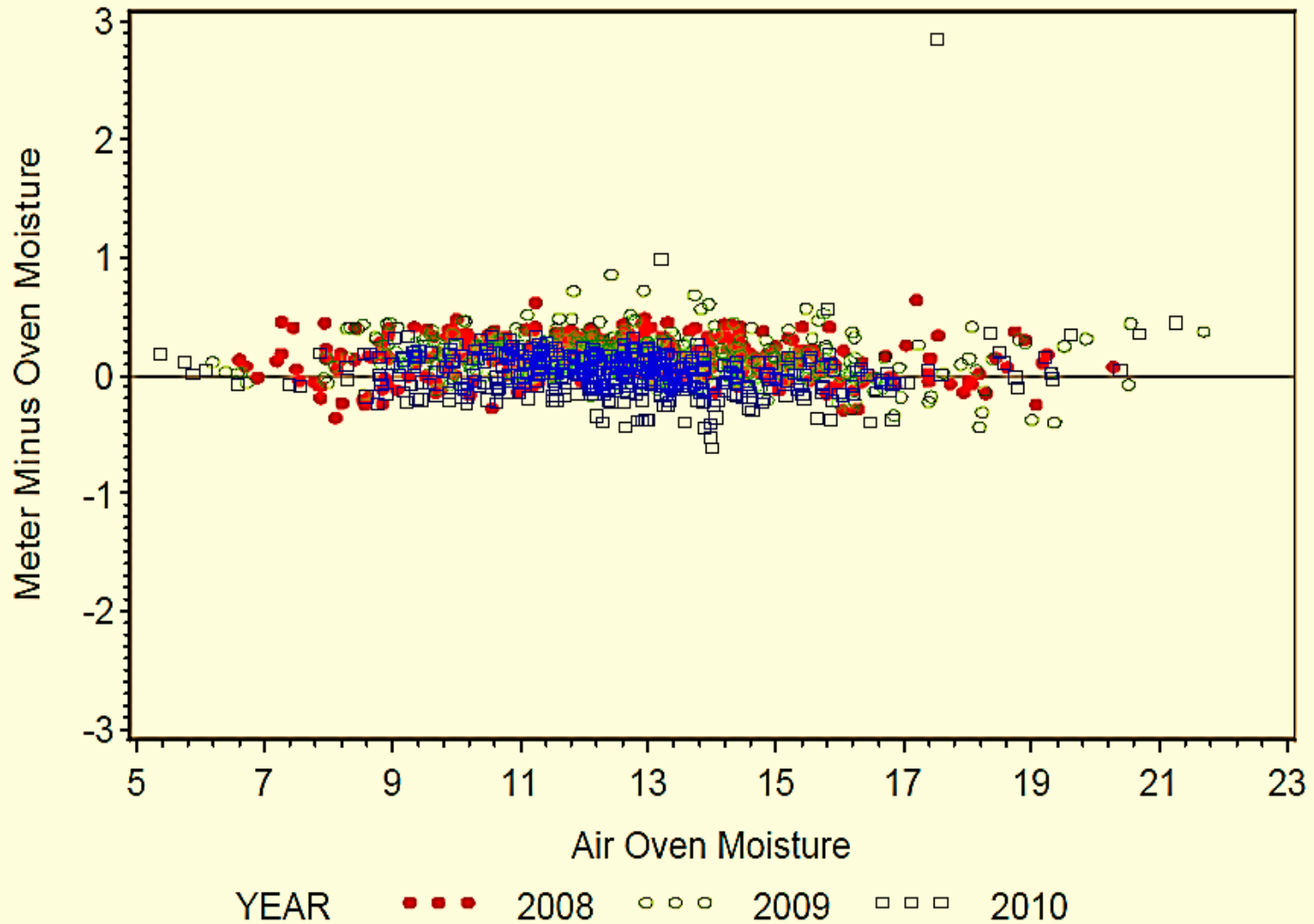
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Meter Moisture as a Function of Air Oven Moisture

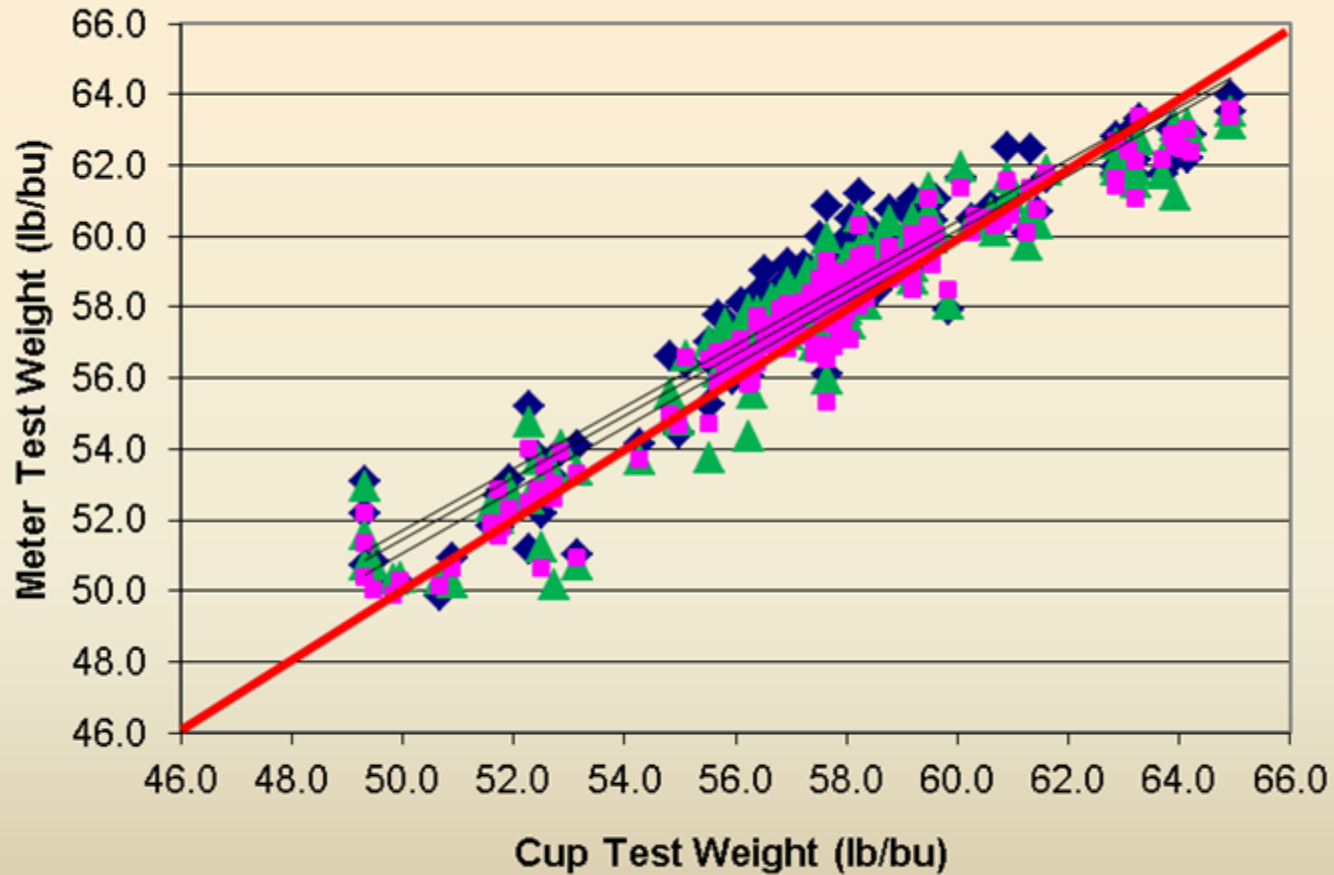


Some Wheat Data

Plots of Meter Accuracy vs. USDA Air Oven Moisture



Accuracy of Moisture Meters for Test Weight, 2010 corn



149 mhz unit

The New Moisture Technology

- 149 mhz frequency; use Unified Grain Moisture Algorithm
- Master test cell in Kansas City (GIPSA)
- Two brands; within +/- 0.4% of each other on individual samples; +/- 0.1% average on GIPSA annual calibration set.
- Cold, hot grain: Expect +/- 0.1-0.2 % of normal

New Moisture Meter: Actions

- Better on cold, hot, light, immature, high moisture grains. Better inventory balance.
- In most of these cases: higher readings
- Consider updating as soon as possible.
- There will be cases where new and old meters do not agree.
- Old meters are still legal; state law will govern.

Consumer Issues: Food Safety

Sec. 103: Hazard analysis and risk-based preventive controls

Requires human and animal food facilities to:

- Evaluate hazards that could affect food safety;
- Identify and implement preventive controls to prevent hazards;
- Monitor controls and maintain monitoring records; and
- Conduct verification activities.

Grain handling, storage, drying is considered part of the supply chain, not the farm.

FSMA and the Grain Industry

- **Update registration every two years**
- **A written food safety plan is required**
- **Carrier certification and examination (BSE)**
- **Surveillance inspection every 5-7 years**

- **Accuracy guidelines for enhanced traceability**
- **FDA now can force a recall**
- **Self reporting website apply to mycotoxins???**
- **Inspect records and audit without prior cause**



First Actions



- Clean up the mess. Doesn't take a lot of training for an inspector to see sanitation problems.
- Start on a Food Safety Plan. Demonstrate positive intent.
- Document what could cause food safety problems – eg. mycotoxins, animal proteins, piles. Draw out your operation.

How do I make a Food Safety Plan?

1. Food Safety Team
2. Create a Flow Diagram
3. Identify hazards – practical preventions
4. Record keeping system for policies
- 5. Then use the data for improvements**



www.iowagrains.org

Dr. Angela Laury, FSHN, ISU

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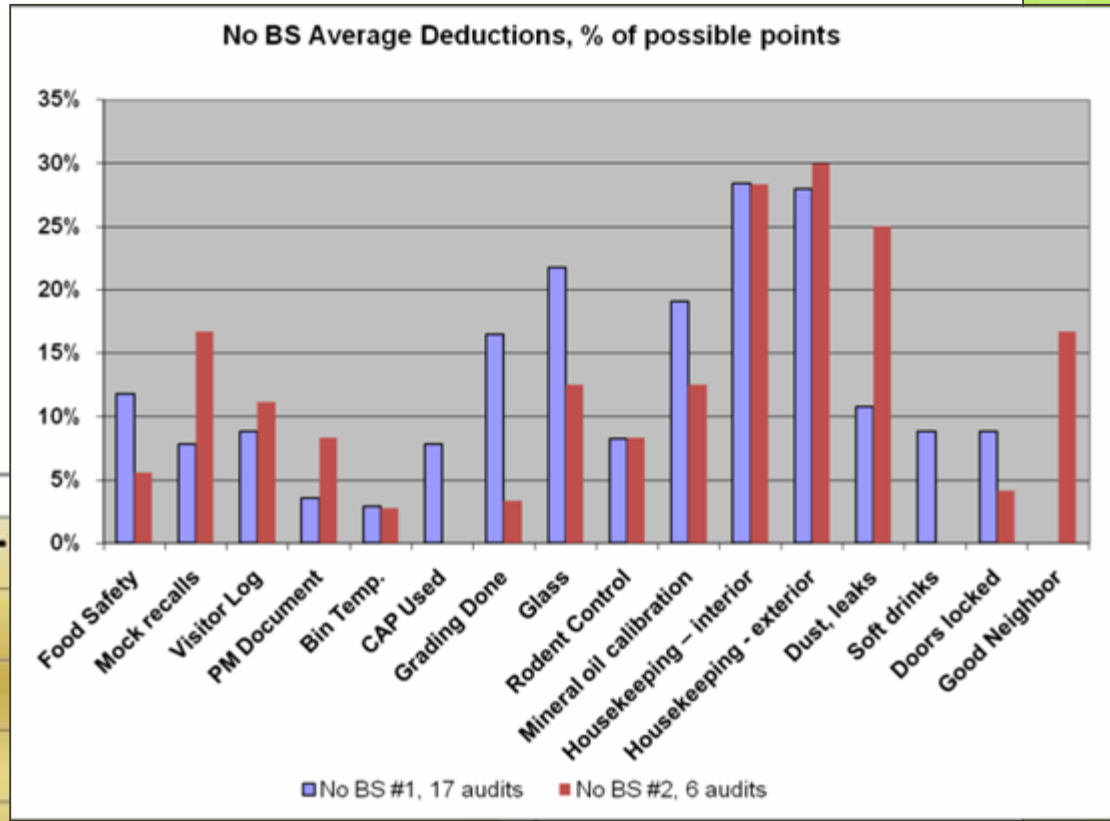
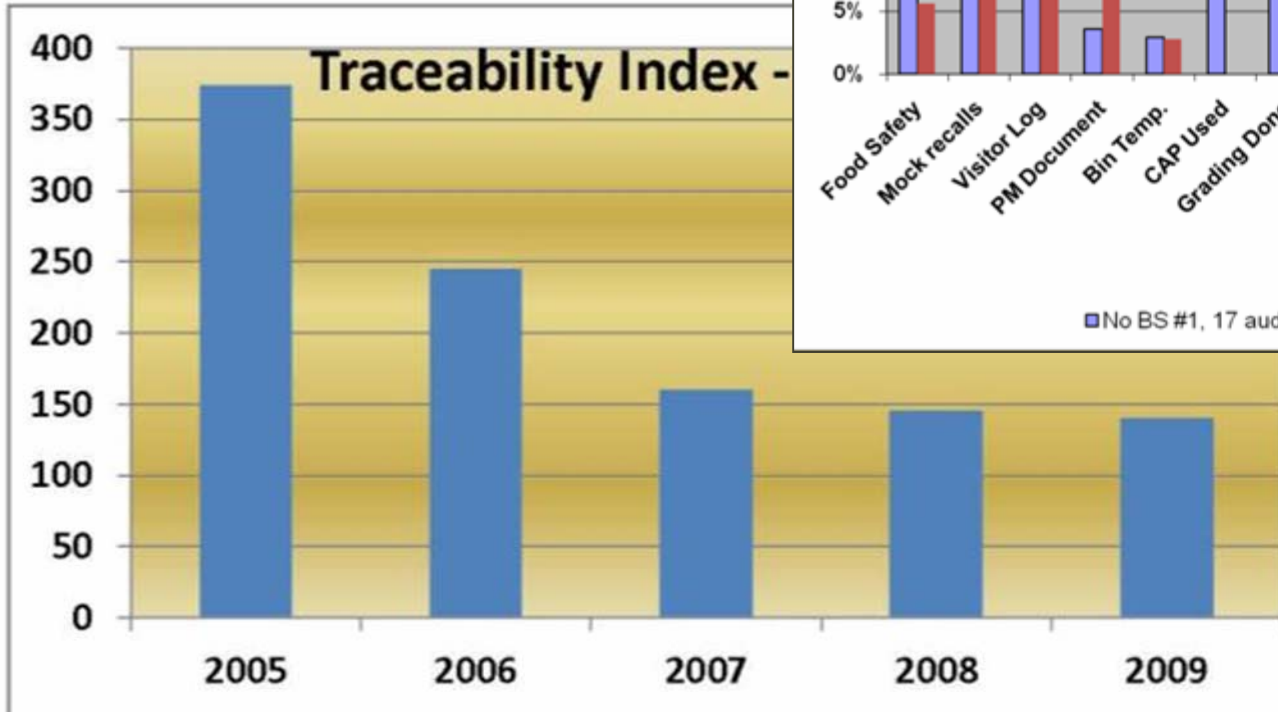
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Food Safety in a Quality Management System



Audits and Mock Recalls



Grain Farms and FSMA

Farms are exempt but....

- Grain handling, storage, drying is considered part of the supply chain, not the farm.
- RMA, insurance carriers studying toxin rules.
- Traceability info may push back to the farm.
- FDA inspect grain farms? Probably not.
- Animals, animal products? Probably so.
- Progressively less tolerance for moldy grain.

Weather/Climate Variability

- Outside range of previous experience
- Key response: Don't take chances with known practices that work.
- Be precise in grain management
 - Test weight as indicator of storability
 - Immediate cooling(dryer and inbound)
 - Track grain temperatures and use the data.

Iowa Grain Quality Initiative



Iowa Grain Quality Initiative



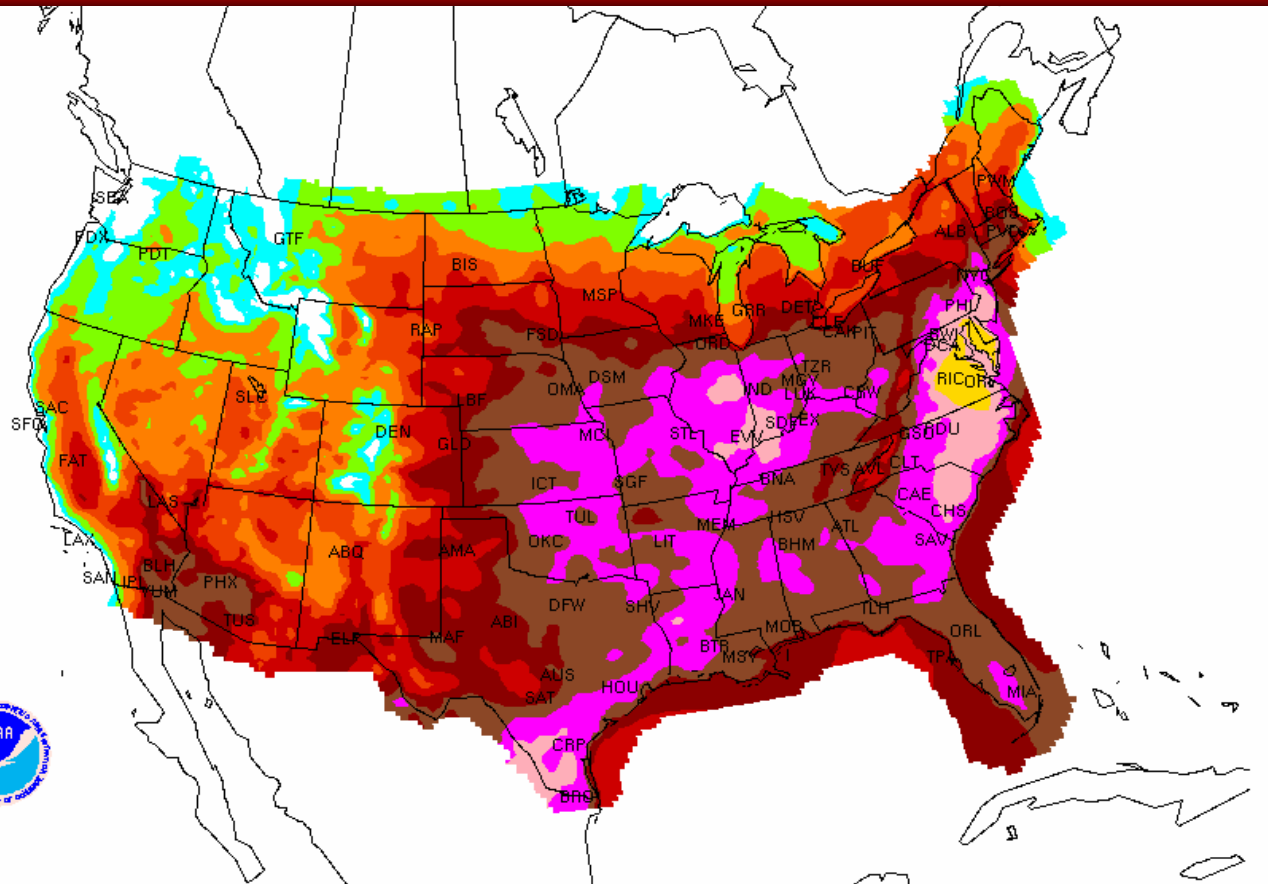
Photos courtesy: Mark Licht, ISU Extension



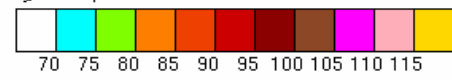
Iowa Grain Quality Initiative



Knoxville, IA: July 18, 2011; Hx=131 F



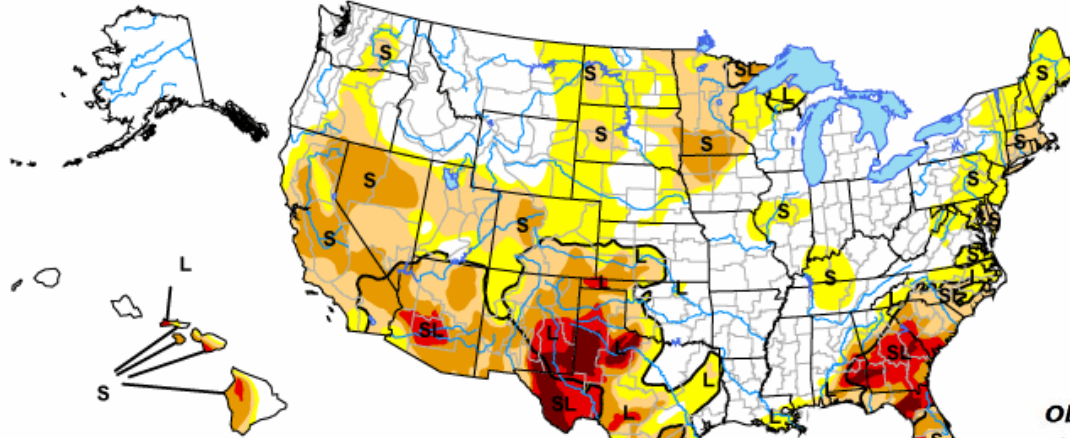
DAY 3 FORECAST DAILY MAXIMUM HEAT INDEX (DEG F)
ISSUED: 1836 UTC TUE JUL 19 2011
VALID: FRI JUL 22 2011
DOC/NOAA/NWS/NCEP
HYDROMETEOROLOGICAL PREDICTION CENTER



Iowa Grain Quality Initiative

U.S. Drought Monitor

April 3, 2012
Valid 7 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

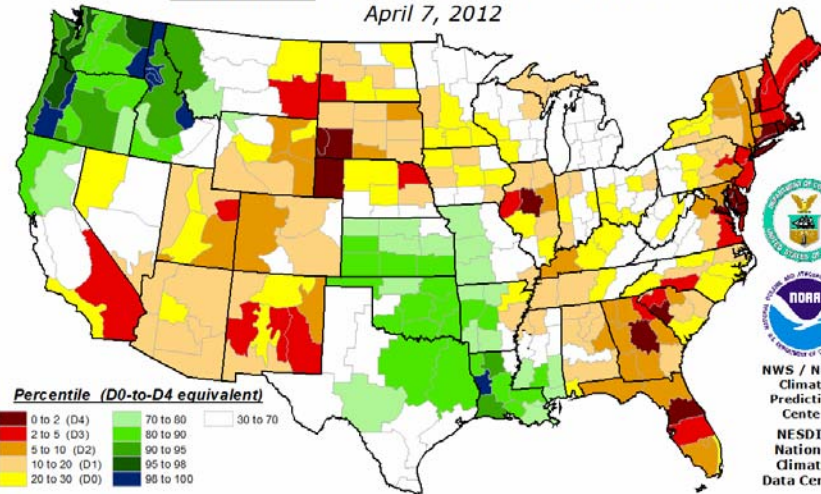
<http://droughtmonitor.unl.edu/>



Released Thursday, April 5,
Author: Brian Fuchs, National Drought Mitigation (

Objective Short-Term Drought Indicator Blend Percentiles

April 7, 2012



Percentile (D0-to-D4 equivalent)

- 0 to 2 (D4)
- 2 to 5 (D3)
- 5 to 10 (D2)
- 10 to 20 (D1)
- 20 to 30 (D0)
- 70 to 80
- 80 to 90
- 90 to 95
- 95 to 98
- 98 to 100
- 30 to 70

Inputs (as percentiles):

- 35% Palmer Z-Index
- 25% 3-Month Precipitation
- 20% 1-Month Precipitation
- 13% CPC Soil Moisture Model
- 7% Palmer Drought Index

This map approximates impacts that respond to precipitation over several days to a few months, such as agriculture, topsoil moisture, unregulated streamflows, and most aspects of wildfire danger. The relationship between indicators and impacts can vary significantly with location and season. Do not interpret this map too literally.

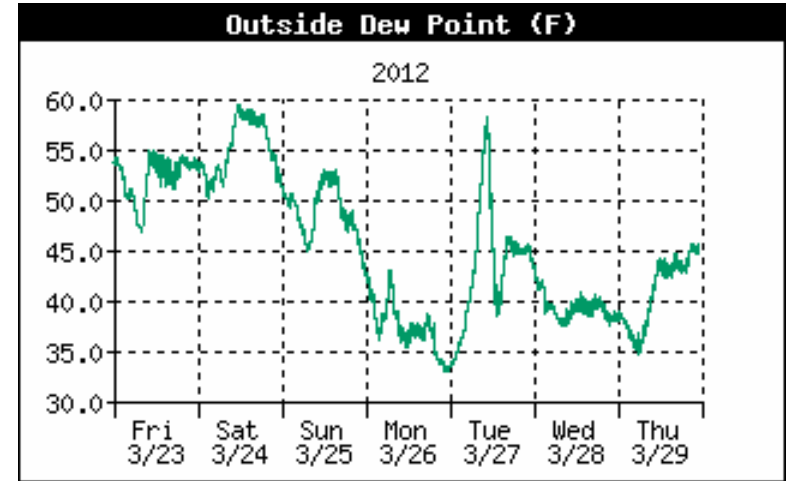
This map is based on preliminary climate division data. Local conditions and/or final data may differ. See the detailed product suite description for more details.



Grain Issues Now

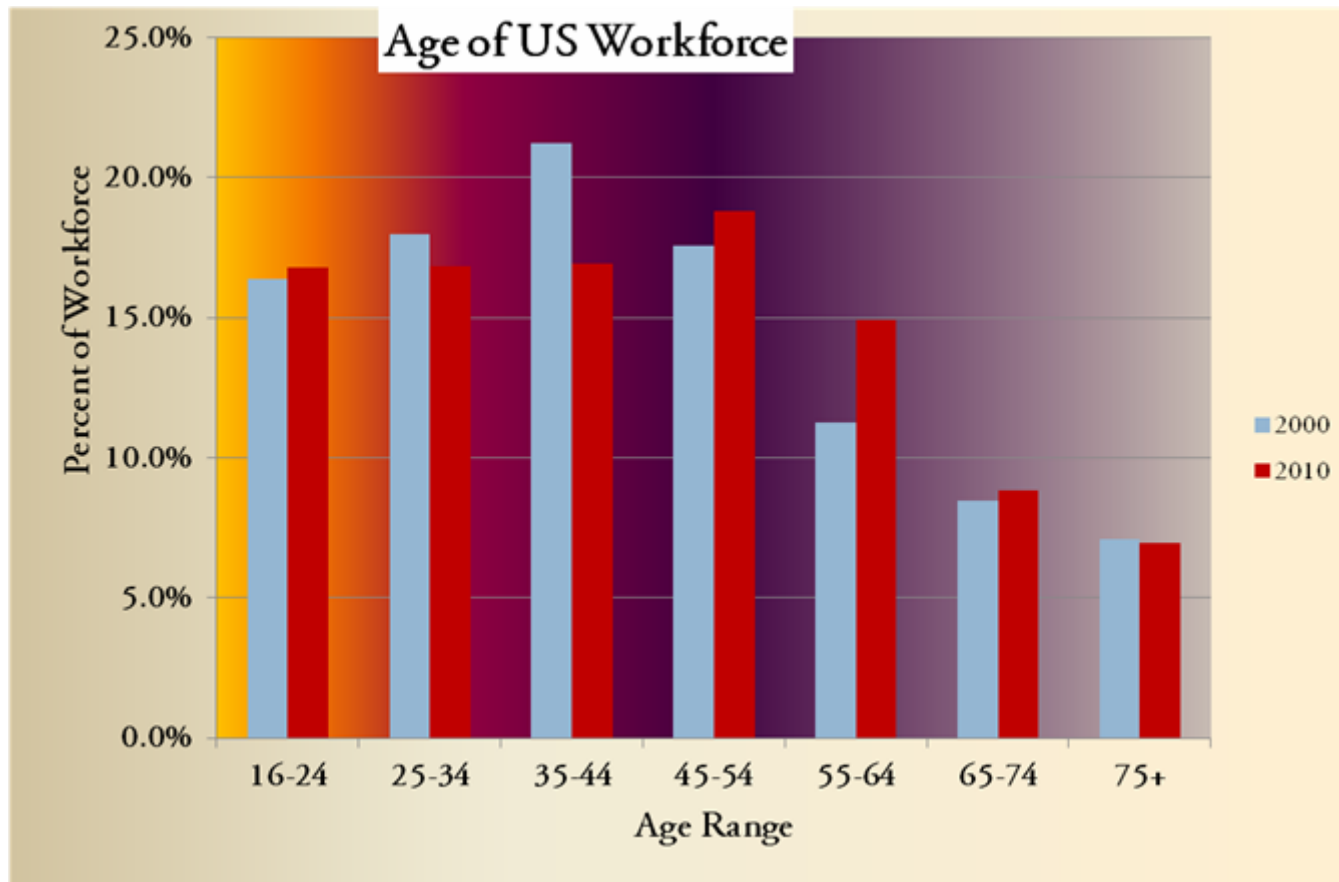
- No winter – Dewpoints!
- Bugs!
- AST gone?
- Uniform Temps?

Dewpoint: 18 °F :Ames Iowa, 4/11/2012, 11AM)



Work Force Changes

60% of the US Workforce will Retire in the Next Decade... **That means your employees!**



Linda M. Springer, director of the US Office of Personnel Management (OPM) in *Retirement Tsunami: Workers are retiring with a lesser number to replace them.* Sept 2007. Municipal Solid Waste Management.

ICGOP

The primary education and applied research partner to the global grain handling and commodity utilization industry.

International Center for Grain Industry Operations and Processing, Inc.

Incorporating Partners, February 20

A Path into the Future

In a time of rapid change, it's time to focus on how to meet the demands of a global industry in need of education and training.



Loss of experienced employees and related problem-solving capacity will be solved by an integrated education and research center serving the global grain supply chain.

ICGOP, Inc. Programs

- Distance education for handling, processing and related industry employee training
- More intensive hands-on training deliverables at multiple locations
- Credentialing to mark successful completion and encourage ongoing education
- Augmentation for on-campus degree programs (4 year and 2



Problems to Solve Now – Quality/Quantity

- Review/consolidate current University and industry materials**
- Interactive tools for grain management:**
 - Remaining shelf life given ongoing storage condition and air condition data**
 - Aeration and spoilage shrink/volume to bushels estimation/inventory tracking**
 - Product storage economics on a daily basis.**
 - Inventory tracking/traceability on a real time basis.**
- Support the electronic tools with fact sheets and/or interactive video shorts.**

Large Challenges

- Productivity and Demand for Natural Resources
- Technology
- Standard of Living/Consumer Issues
- Weather Variability
- Work Force Turnover

What are You Doing to Meet Them?

Where To Find Us...



www.iowagrains.org

www.grainlab.org

**Analytical Programs
Quality Management
Systems**

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