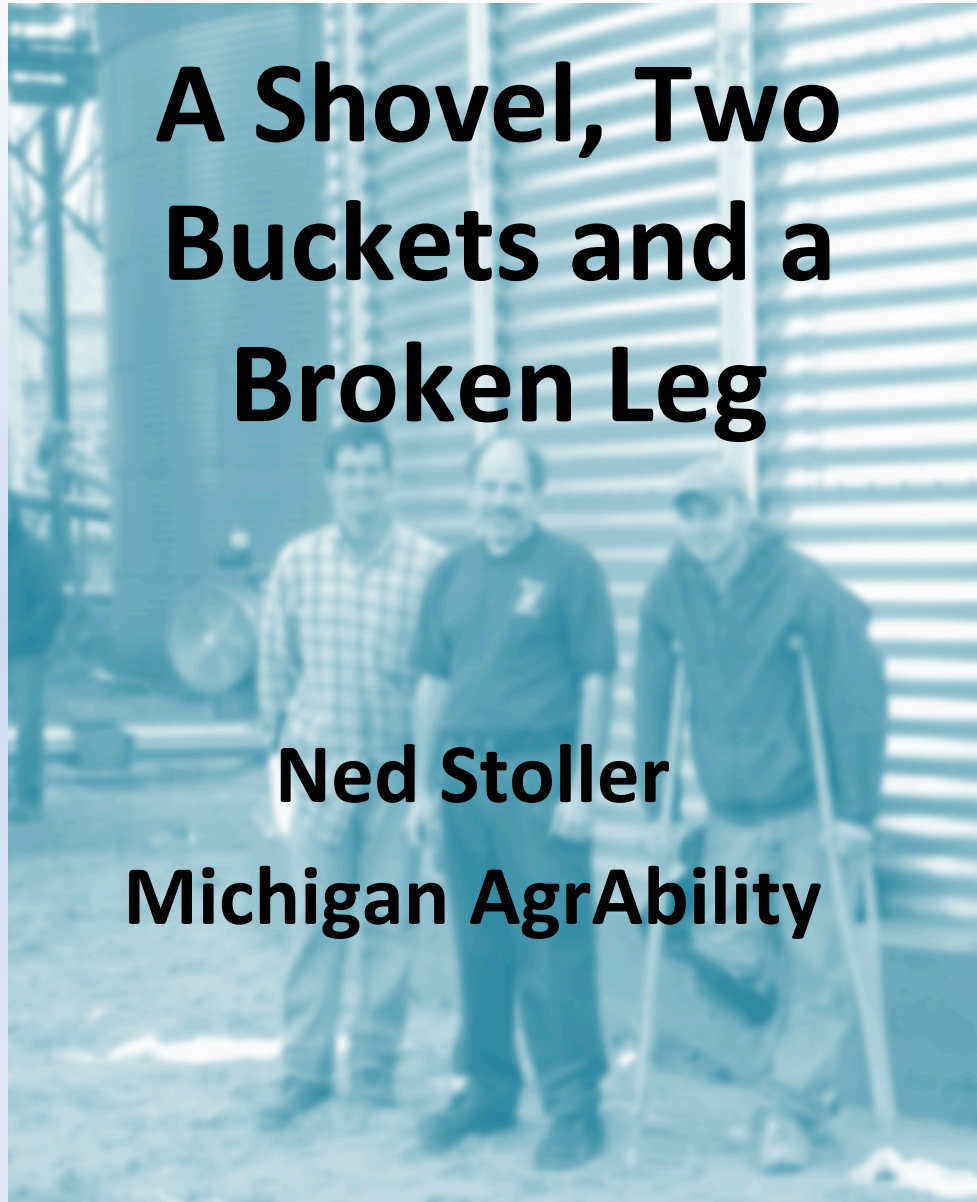


# **A Shovel, Two Buckets and a Broken Leg**

**Ned Stoller  
Michigan AgrAbility**



# Why Store Grain On-farm?

- Livestock feed
- Grain marketing
- Grain quality



# Physical Limitations

- Respiratory – dust and mold
- Vision – aligning augers and bin lids
- Upper extremity – safe climbing vertical ladders
- Back impairment – shoveling
- Lower extremity – moving augers



# Grain Bin Management

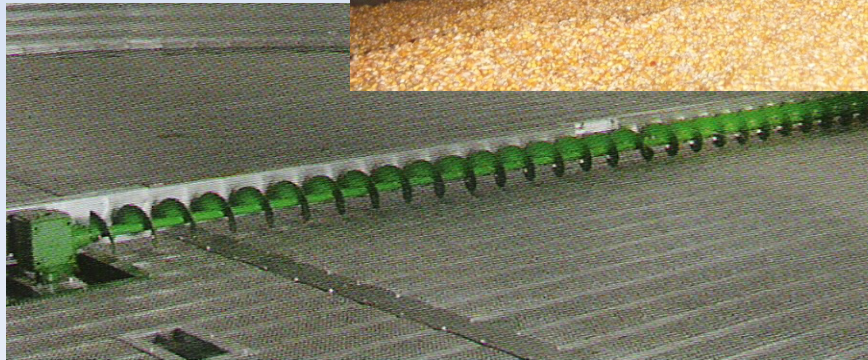
Filling Bins



Monitoring  
Stored Grain



Emptying Bins





# Filling Bins

- Auger
  - Lower \$, power, grain damage
  - More work & climbing
  - More risk of wind damage
- Air/Pneumatic
  - Less work & climbing
  - Less risk of damage
  - Higher \$, higher power required
  - More damaged grain



# Filling Bins

## Positioning Augers

- Wheel markers
- Chains
- Camera/monitors

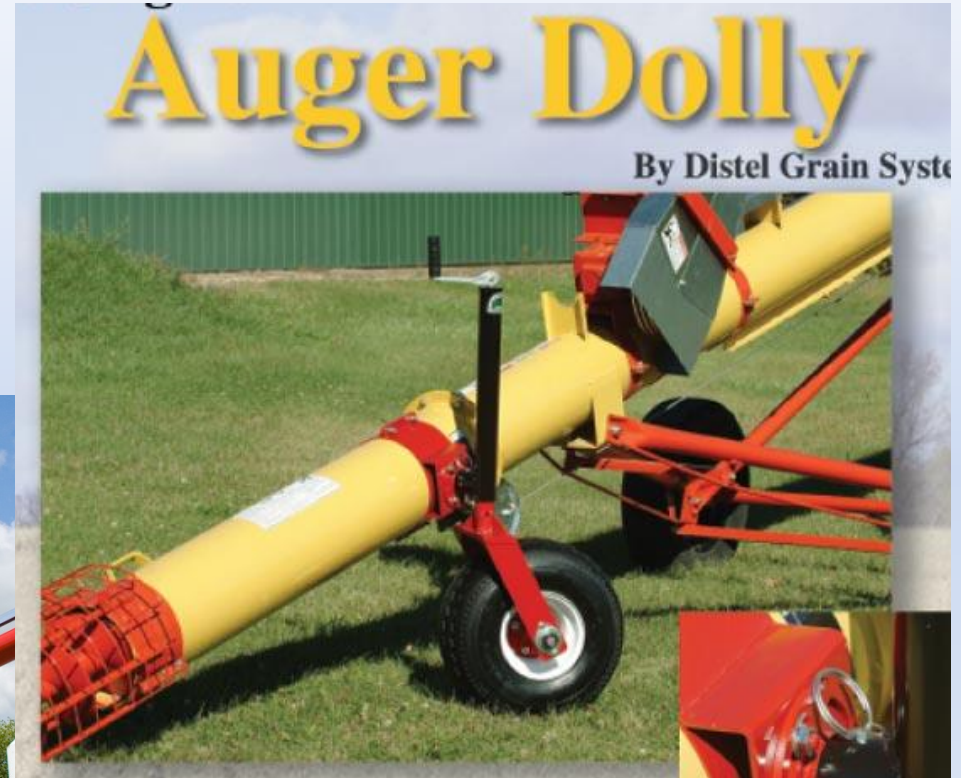




# Filling Bins

## Moving Augers

- Skidsteer
- Powered auger mover





# Filling Bins

## Adjusting Augers

- Hand crank
- Powered lift
- Opening bin lids



# Filling Bins

## Pneumatic Systems

- No moving large equipment
- No opening/closing lids





# Monitoring Stored Grain

Grain level in the bin

- Flap type
- Weighted rope, pulley & flag
- Pressure sensors





# Monitoring Stored Grain

Grain level in the bin

- Weighted rope, pulley & flag



# Monitoring Stored Grain

## Fan & dryer controls

- Temperature sensors
- Moisture sensors
- Automatic stirring augers
- Automatic fans



The advertisement for BinCheck features a top banner with several large metal grain silos. Below this, the BinCheck logo is prominently displayed, consisting of a green upward-pointing arrow and the text 'BinCheck Handheld Monitor'. To the right of the logo is a red starburst graphic that reads 'FREE QUOTE' and 'LOO@INTELLIAIR.COM'. The central image shows the BinCheck handheld monitor, a small digital device with a screen and buttons, connected by a cable to a larger black unit. A handwritten note '3Xish' is written on the image. Below the image, the text 'Simplify Your Grain Management by Checking Your Bins at the Site' is written. The advertisement then provides a detailed description of the system, stating that it allows users to monitor and analyze data using a simple device that plugs into a panel on the exterior of grain bins. It lists several benefits, including easy and convenient plug-in device, 2G Moisture Cable for in-bin moisture content monitoring, THERMOCOUPLE CONVERTER™ transforms your thermocouple cables to digital, One handheld unit works on multiple bins, System will help you analyze temperature and moisture trends over time so you can keep your grain management operation running smoothly, BinCheck Deluxe allows you to access all of your data over the Internet and provides alerts when there is a problem with the bin, and Check multiple bins and read data from unlimited amount of cables. The advertisement also includes a section titled 'Prevent Loss and Damage' which lists several benefits, including Helps maintain the integrity of the grain in all areas of the bin, No computer or Internet required, Add Internet capabilities with BinCheck Deluxe, User friendly, Prevent shrinkage and spoiled product by ensuring your operation is efficiently optimizing moisture content, No electrical power required - system runs on long-life lithium ion battery, Connector box mounts conveniently to the outside of the grain bin, providing walk-up access, Back light for checking bins at night, and USB, Car Charger & Carrying Bag included. A testimonial from Star Farms is included, stating that BinCheck is simple and easy to use, and that it has helped them monitor their grain on the Internet. The advertisement concludes with the text 'EASILY UPGRADABLE TO BINMANAGER BASIC!' and a footer with the website 'INTELLIAIR.COM', phone number '888.862.6046', and 'MADE IN THE USA'.

**BinCheck**  
Handheld Monitor

**Simplify Your Grain Management by Checking Your Bins at the Site**

The BinCheck Handheld system allows you to monitor and analyze data using a simple device that you plug into a panel on the exterior of your grain bins. This system provides walk-up access to your bins to read and monitor your temperature and moisture data. Using BinCheck helps you maximize profits by getting the best possible test weights at market.

- Easy and convenient plug-in device keeps you informed at the bin site
- 2G Moisture Cable for in-bin moisture content monitoring
- THERMOCOUPLE CONVERTER™ transforms your thermocouple cables to digital
- One handheld unit works on multiple bins
- System will help you analyze temperature and moisture trends over time so you can keep your grain management operation running smoothly
- BinCheck Deluxe allows you to access all of your data over the Internet and provides alerts when there is a problem with the bin
- Check multiple bins and read data from unlimited amount of cables

**Prevent Loss and Damage**

- Helps maintain the integrity of the grain in all areas of the bin
- No computer or Internet required
- Add Internet capabilities with BinCheck Deluxe
- User friendly
- Prevent shrinkage and spoiled product by ensuring your operation is efficiently optimizing moisture content
- No electrical power required - system runs on long-life lithium ion battery
- Connector box mounts conveniently to the outside of the grain bin, providing walk-up access
- Back light for checking bins at night
- USB, Car Charger & Carrying Bag included

*"Bin Check is simple. It's a "no maintenance" way to check my grain and now I have even upgraded to Bincheck Deluxe, so I can monitor my grain on the Internet. Even though I am a small farmer IntelliAir has been there for me -- and truthfully in the way that IntelliAir treats me, you would think I had a million bushel storage."* - Star Farms

**EASILY UPGRADABLE TO BINMANAGER BASIC!**

VISIT US ONLINE TODAY FOR MORE INFORMATION - INTELLIAIR.COM • CALL INTELLIAIR - 888.862.6046 • MADE IN THE USA



# Monitoring Stored Grain

## Bin Steps

- Sure step platforms
- Safety, Pain
- Strength, Fatigue





# Monitoring Stored Grain

## Grain Dust respirator

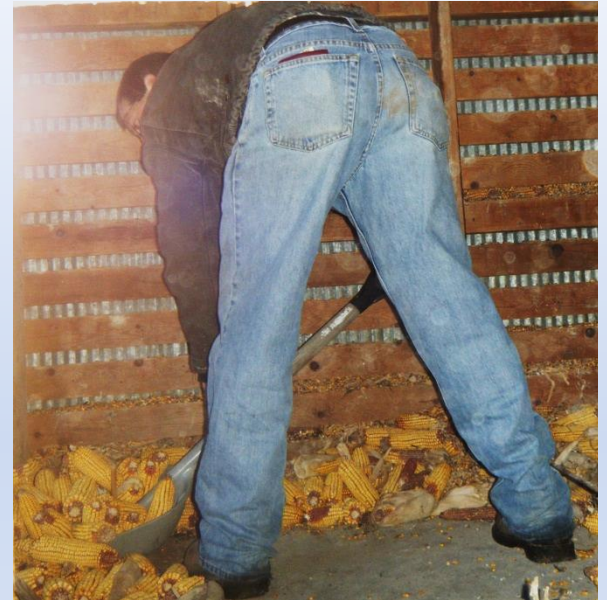
- Prevent mold and dust from entering lungs
- Pressurized air purifier provides steady stream of clean air under helmet



# Emptying Bins

Sweeping and Shoveling to clean out bins

- One-arm broom
- Fat handles

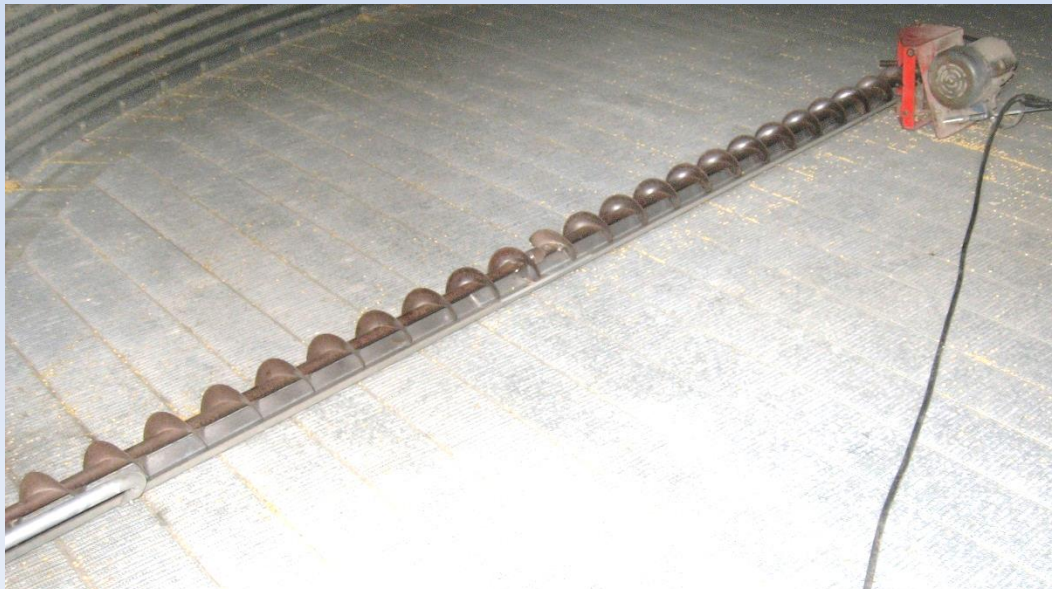




# Emptying Bins

## Electric Sweep Auger

- Minimizes shoveling grain by pulling grain to center
- Heavy lifting and awkward carrying to install
- Dangerous, especially for workers with lower extremity impairments



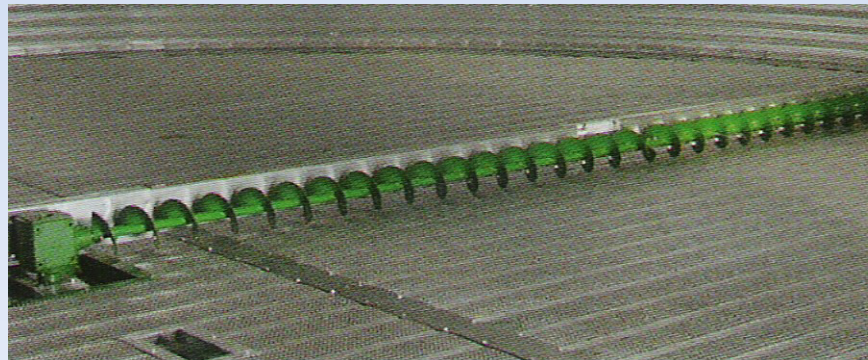
2-ring door  
standard  
on all new  
Brock bins



# Emptying Bins

## Power Sweep Auger

- Minimizes shoveling grain by pulling grain to emptying ports
- No heavy lifting and awkward carrying to install sweep auger
- Drive by exterior shaft under bin floor



# Emptying Bins

## Grain vacuum

- No shoveling or sweeping grain
- Vacuum hose pulls grain out of bin into trucks





# Emptying Bins

## Hopper Bottom Bins

- No shoveling or sweeping grain
- Gravity flow into auger, air-stream, or trucks



# Grain System AT Summary

## Pneumatic Grain System – high cost, high impact

- Vision, Upper & Lower Extremity, Back Impairment, Strength & Endurance

## Electronic Sensors – medium cost, medium impact

- Upper & Lower Extremity, Strength & Endurance

## Bin Steps – medium cost, medium impact

- Upper & Lower Extremity, Strength & Endurance

## Permanent Sweep Auger – high cost, medium impact

- Respiratory, Upper & Lower Extremity, Back Impairment, Strength & Endurance

## Bin Level Indicator – Low cost, medium impact

- Upper & Lower Extremity, Strength & Endurance

## Wheel Markers & Cameras – Low cost, medium impact

- Vision



# Grain System AT Suppliers

## Local Grain Bin Installers/Dealers

- Know about the latest technology
  - Mistakes made by not consulting with bin dealer before making recommendation
  - New technology always being developed, especially monitoring & controls
- Understand installation methods and costs
- GSI [www.grainsystems.com](http://www.grainsystems.com)
- Sukup [www.sukup.com](http://www.sukup.com) 641.892.4222
- Brock [www.brockgrain.com](http://www.brockgrain.com) 574.658.4191
- ...many more

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