

## Planter Unit – Check List

- A. Drive Shaft
  - a. Bearings
  - b. Sprockets
  - c. Dogs or Clutches (ratcheting devices)
  - d. Check engagement where hinge points are located
  
- B. Drive Wheels
  - a. Sprockets
  - b. Bearings
  - c. Chains
  - d. Idler
  - e. Idler Bushing
  
- C. Carrying Wheels or Lift Wheels
  - a. Make sure that where it pivots is not worn or oblong
  - b. Replace lift arms if they are worn
  
- D. Drill Shaft
  - a. Bearings
    - i. Make sure they run free
    - ii. Check Alignment
  - b. Transmission
    - i. Check cotter keys
    - ii. Make sure holes aren't elongated
    - iii. Determine if bearing turns free without the chain
  - c. Check engagement where hinge points are located
  
- E. Row Units
  - a. Parallel arm linkage
  - b. Bushing
  - c. Check lift arm's pivots are good, replace lift
  - d. Check shank integrity, make sure it is not bent – if bent, replace  
\*\*\*The appearance of the shank being bent could also be caused by a bent parallel arm, which would mean replacing parallel arm
  - e. Springs – insure in good condition
  - f. Roller Chain
  - g. Proper align of idler – NOTE: Any old planter with roller bushing idlers on planter drive needs updating to make chain run smooth
  - h. If drive chain starts to lose keepers, it is a good indication they are shot
  - i. Check engagement bearing and sprockets to insure bearing turns free
  - j. Check coupler for alignment to boxes and condition of coupler
  - k. Run on stand to make sure boxes run smooth (do not wobble or shake)

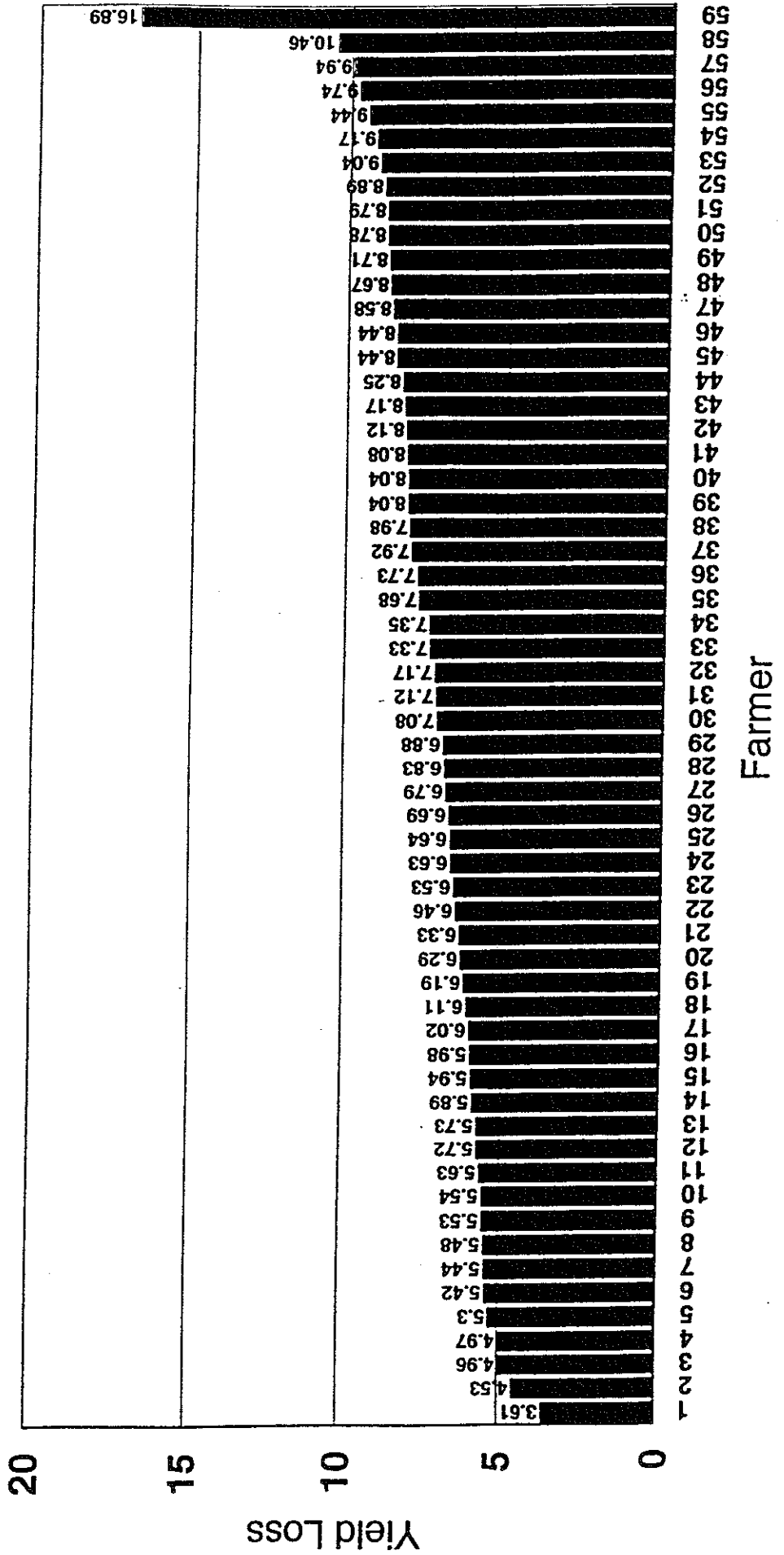
- F. Disk Openers
  - a. Change at 14 ½"
  - b. Make sure they are shimmed properly, touching 2 – 2-1/4"
  - c. Make sure disk openers are true
  - d. Cast frogs
  - e. Check seed tube for wear (from disk)
  - f. Clean out dirt, mud, etc. around seed tube – add seed flap to prevent ricochet
  - g. Check sensors to make sure they all work
  - h. Check monitors, radar guns before going to field
  - i. Change calibration numbers if monitor is not reading population
  
- G. Gauge Wheels
  - a. Determine if they are running true (no bent pans)
  - b. Check bearing freeness
  - c. Arms – determine if there is slope to insure proper adjustment
  - d. Scrapers – prefer Air Design scrapers
  - e. Should all have accu-depth
  - f. Gauge wheels should touch the disk openers 5 -6" in the front bottom
  
- H. Press Wheels
  - a. Make sure it is easy to adjust (so it's not running on top of the row)
  - b. Make sure they are running smooth – if rough replace bearing
  
- I. Markers
  - a. Check marker hinge points, welds, and also for cracks
  - b. Check disk bearing
  - c. Check all hinge points
  
- J. Wiring
  - a. Make sure wiring is secured in place properly to prevent getting caught
  
- K. Hydraulic Hoses
  - a. Check all hoses and fittings
  - b. Hydraulic hoses have collapsed inside, causing improper flow to blowers or vac motors
  - c. Replace hose
  
- L. Seed Meter Units
  - a. Check all seed meter units
  - b. Poncho, Cruiser, etc. seed treatments on vac planters use graphite/talc mix ½ to ¾ cup per box
  - c. Finger Planters and Case IH use graphite ½ cup per box

\* If unit has Martin trash wheels, etc. check to make sure bearings are free

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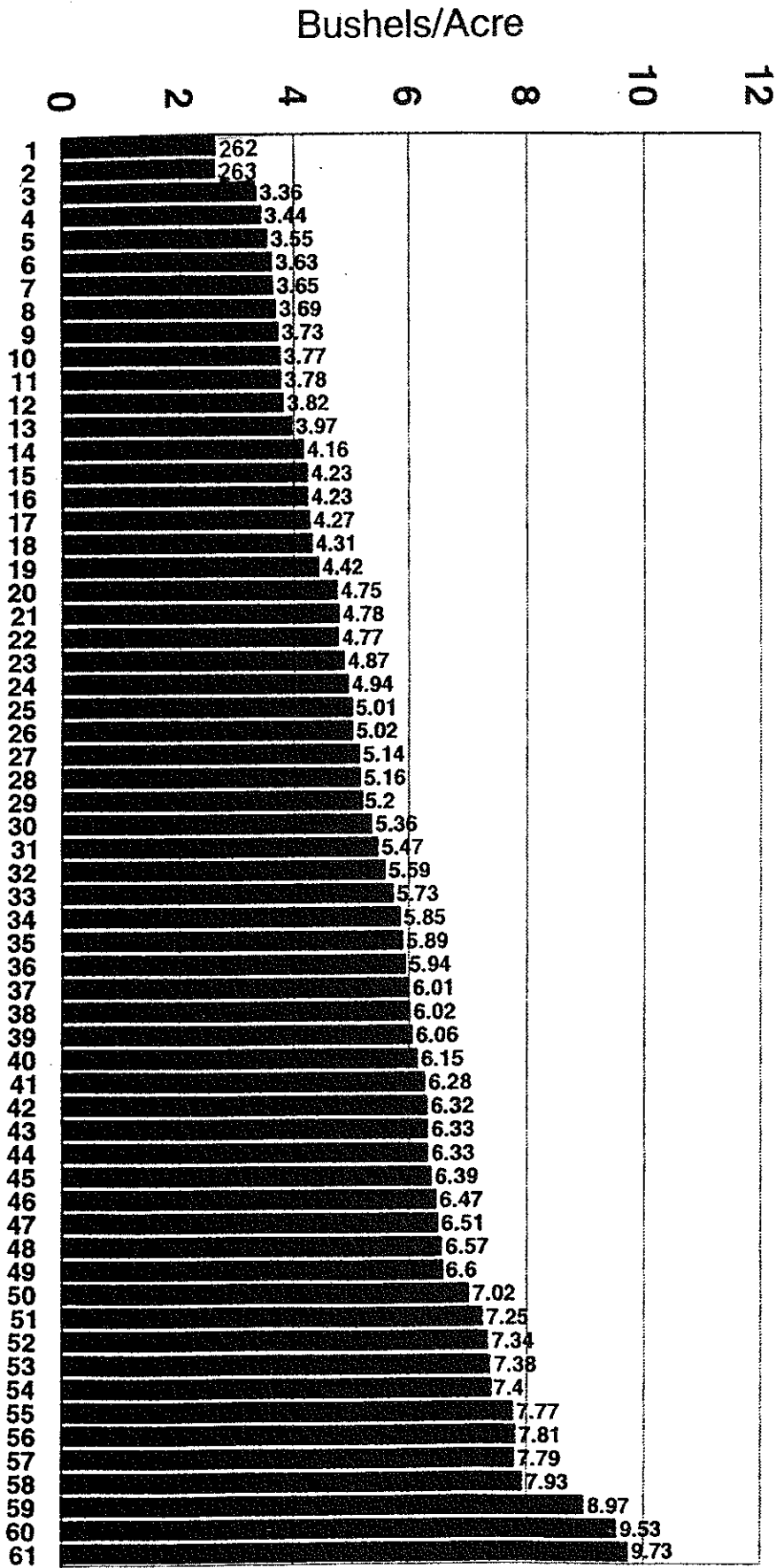
# Plant Spacing Variability Study

## Average Bushel Loss



# 2001 Plant Spacing Variability Study

## Ranking of Potential Yield Loss



## RESEARCH AT PURDUE UNIVERSITY (Dr. R.L. Nielsen)

- Plant spacing variability ranged from 2 to 8.5 inches (standard deviation)
- Estimate 2.5 bu/acre lost for every 1 inch standard deviation
  - Best fields were losing 5 bu/acre
  - Worst fields were losing 21 bu/acre

84% of the fields could have been improved by 5 bushels or more – wet year is more forgiving

## EFFECT OF UNEVEN STAND ON SEED COST

- Finger planter meter
- Seed cost of \$90 per bag
- Planting rate of 30,000 seeds per acre
- Seed cost of \$33.75 per acre
- Assume one double each revolution
  - Increase seed cost \$2.81 per acre
  - Plant 8% less acreage

## UNIFORM PLANT SPACING

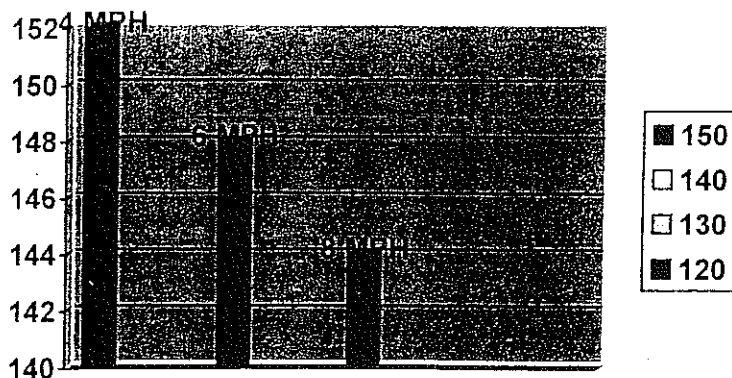
- Equal distant plant spacing
  - Gives maximum light interception
  - Reduces "interplant" competition
- Uniformity can be improved through
  - Reducing skips
  - Reducing doubles

## UNEVEN EMERGENCE

Our past studies have shown  
9 – 18 bu/acre loss

2006 studies at Elburn COOP show yield potential loss to be 20 – 22 bu/acre

Fond du Lac Wisconsin 1998



## HOW FAST IS FAST?

- **30" rows planted at 5.5 MPH to achieve 30,000 seeds per acre means**
  - each row unit is dropping 14 seeds per second
  - each row unit is traveling 8 feet per second
  - if a seed is delayed  $1/25^{\text{th}}$  of a second
    - the seed will drop 3.2 inches late
- **30" rows planted at 6.5 MPH to achieve 30,000 seeds per acre means**
  - each row unit is dropping 16 seeds per second
  - each row unit is traveling 9.5 feet per second
  - if a seed is delayed  $1/25^{\text{th}}$  of a second
    - the seed will drop 3.8 inches late
- **30" rows planted at 5.5 MPH to achieve 35,000 seeds per acre means**
  - each row unit is dropping 16 seeds per second
  - each row unit is traveling 8 feet per second
  - if a seed is delayed  $1/25^{\text{th}}$  of a second
    - the seed will drop 3.2 inches late

note: 30,000 at 6.5 MPH is the same as 35,000 at 5.5 MPH

- **30" rows planted at 6.5 MPH to achieve 35,000 seeds per acre means**
  - each row unit is dropping 19 seeds per second
  - each row unit is traveling 9.5 feet per second
  - if a seed is delayed  $1/25^{\text{th}}$  of a second
    - the seed will drop 3.8 inches late

Note: Thompson Machine Gun is 18 rounds per second