



# “PLANT HEALTH” APPLICATION OF FUNGICIDES IN SOYBEAN: *A Paradox to the IPM Paradigm?*

Donald E. Hershman

*Extension Plant Pathologist  
University of Kentucky  
Princeton, KY*



# SITUATION

- Prior to 2003 fungicides were rarely used in soybean except in AR, MS, and TN on at most 250,000 acres.
- In 2005, fungicides were applied to an estimated 7 million acres (almost 10% of the U.S. Soybean acres).

# Background

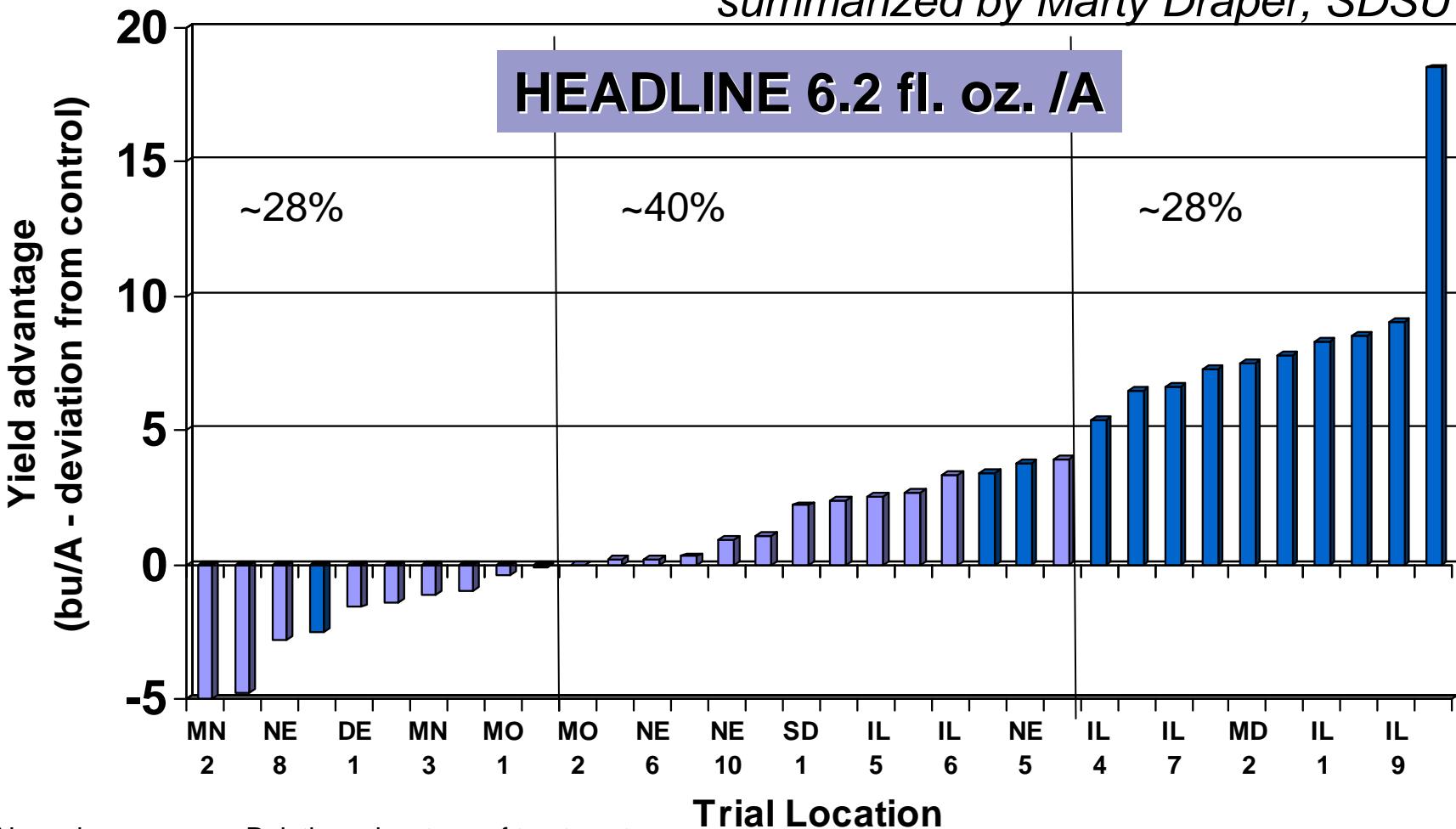
- “Plant Health”
  - Strobilurin fungicide
  - Target: R3-R5 soybean
  - Application regardless of pest history or documented pest potential.
- In 2003-04: Quadris + Warrior marketed for reproductive soybean as a means of capturing additional yield”.
  - Based on favorable grower strip trial results in 2002.
  - 2003 Yield “guarantee program” encouraged use.
- Headline (pyraclostrobin) was labeled in early 2005; Plant Health™;SBR Insurance.
- Use spread throughout the North Central region in 2005.

# Strobilurin Yield Effects in Soybean

- Yield response to strobilurin in replicated plots and non-replicated grower strip tests is ***highly variable***.
  - Negative to 25+ bu/A
- KY results: Significant yield response to strobilurin application in **6 / 22 (27.3%)** replicated studies, 2003-05.
- Midwest: 65 replicated studies conducted in 2005.

# *Yield Response in 35 Replicated Studies*

*summarized by Marty Draper, SDSU*



Numeric response – Relative advantage of treatment  
Absence significant soybean disease in all trials

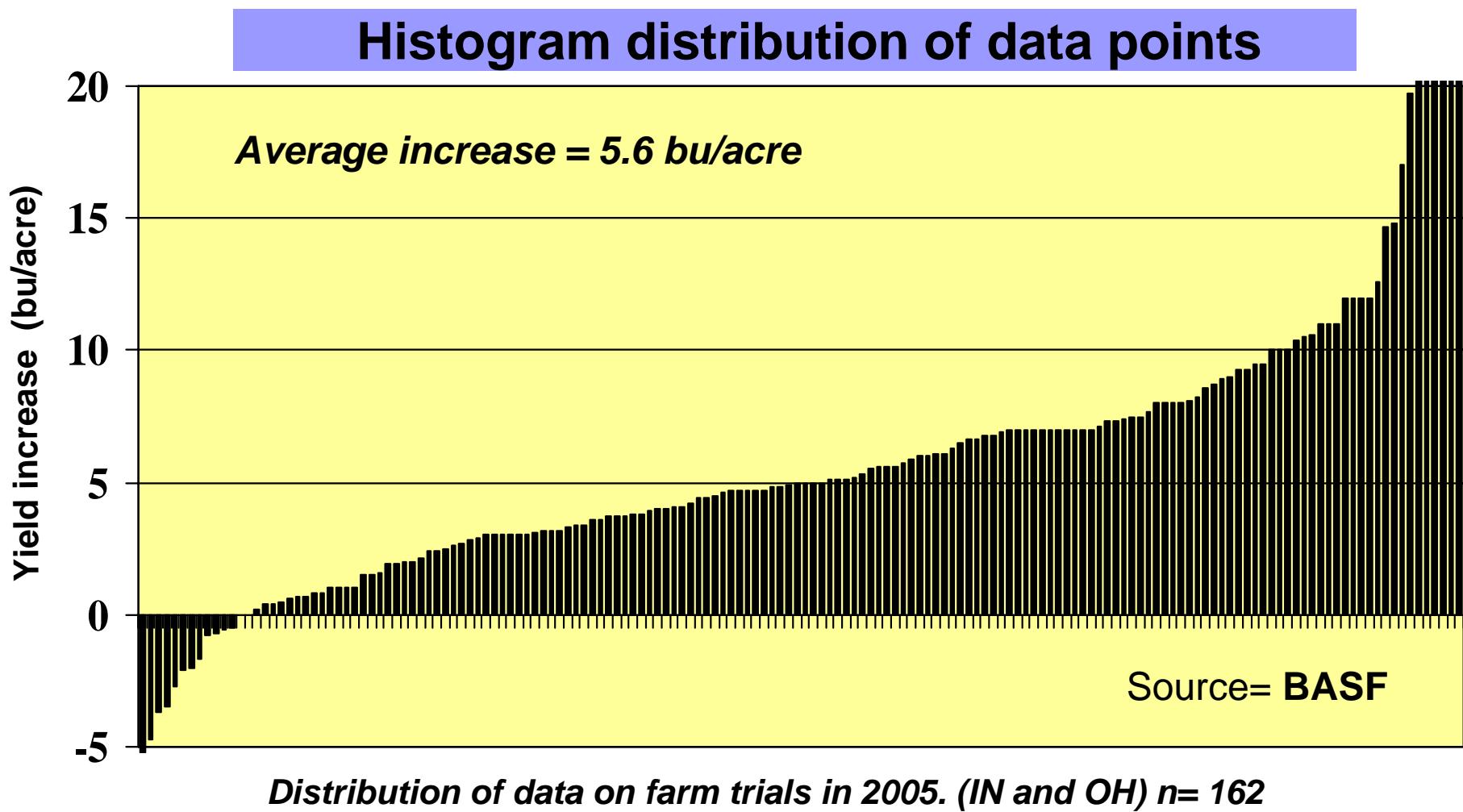
## Frequency of observed significant economic yield increase in 65 Midwest trials, 2005

Fungicide	N	%*
Headline	35	28.6
Quadris	28	28.6
Quilt	18	33.3
Stratego	18	27.8
Folicur	19	15.8
Laredo	16	12.5
Domark	17	11.8

\*Data summarized by Marty Draper, SDSU

# 2005 Soybean yield response

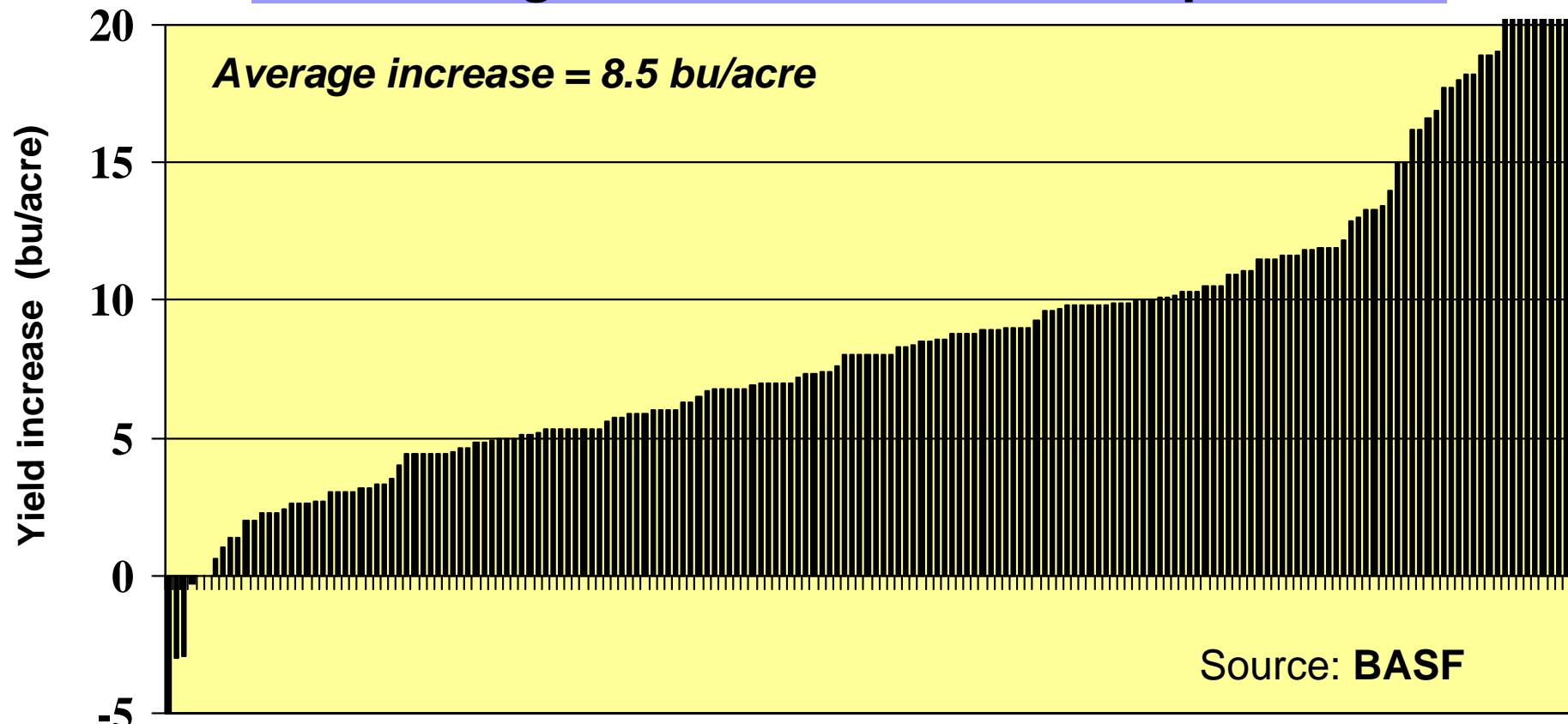
Indiana and Ohio Soybeans: Headline application vs. Untreated



# 2005 Soybean yield response

**Southern Soybeans:** Headline application vs. Untreated

## Histogram distribution of data points



Source: BASF

*Distribution of data on farm trials in 2005. (AR, KY, LA, MS, NC, SC, TN, TX) n=192*

# Basis of Strobilurin “Plant Health” Effect in Midwest?

- Control of “background” levels of certain important fungal diseases and disease complexes.
- Control of unrecognized or non-symptomatic diseases.
- Direct impact of strobilurins on plant biochemistry reduces impact of stress in some soybean cultivars and environments.

# 2006 Fungicide Use in Soybean?

- Poised for a significant increase in the number acres sprayed in U.S.
  - Generally favorable data being made available to growers by fungicide manufacturers and others.
  - Use of “plant health” applications as soybean rust “insurance”.
  - Syngenta attempting to regain market share; BASF attempting to keep market share; other manufacturers desiring to gain market share.

# Conclusions:

- Are “plant health” fungicide applications IPM?
  - NO.....NOT NOW.....MAYBE?
- Is there something going on with “plant health” sprays that we don’t understand?
  - YES
- Do we know which conditions/situations favor a “plant health” response:
  - NO....much more research is needed.

# Conclusions:

- Are “plant health” fungicide applications IPM?
  - NO.....NOT NOW.....MAYBE?
- Is there something going on with “plant health” sprays that we don’t understand?
  - YES
- Do we know which conditions/situations favor a “plant health” response?
  - NO....much more research is needed.
- Should plant health sprays be deployed even they are not based on current IPM principles?
  - Let the discussion commence.