



Influence of Weather and Technology on Corn Yields

Scott Irwin
sirwin@uiuc.edu
University of Illinois



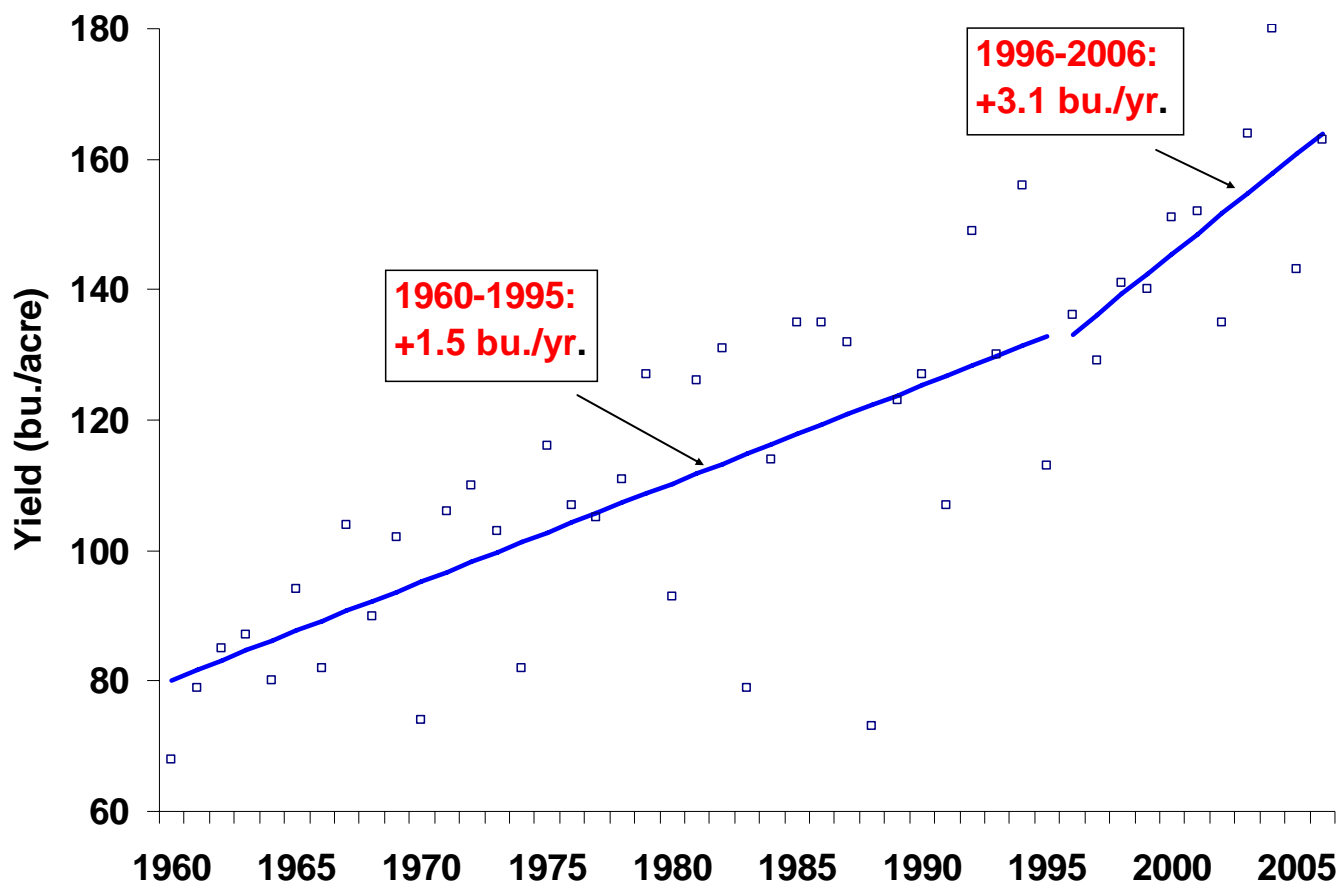
Conventional Wisdom



Illinois Corn Yields, 1960-2006



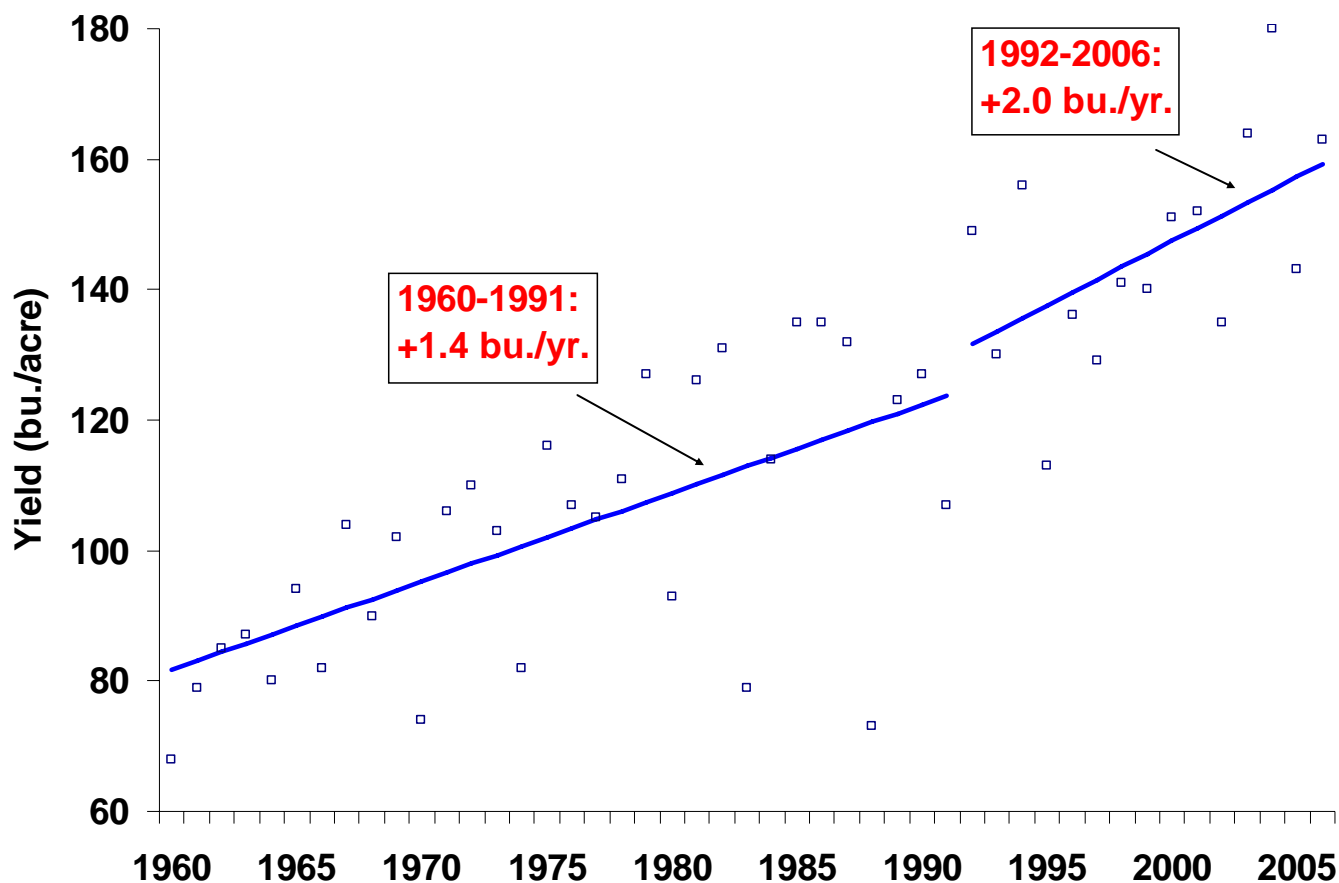
Harness the Power
of the Internet



Illinois Corn Yields, 1960-2006



Harness the Power
of the Internet



- **Yield:** State Average for Illinois, Indiana, Iowa
- **Technology:** Linear Time Trend
- **Precipitation:** Sep-Apr, May, June, July, August
- **Temperature:** May, June, July, August
- **Weather Data:** Monthly Average
- **Time Period:** 1960-2006



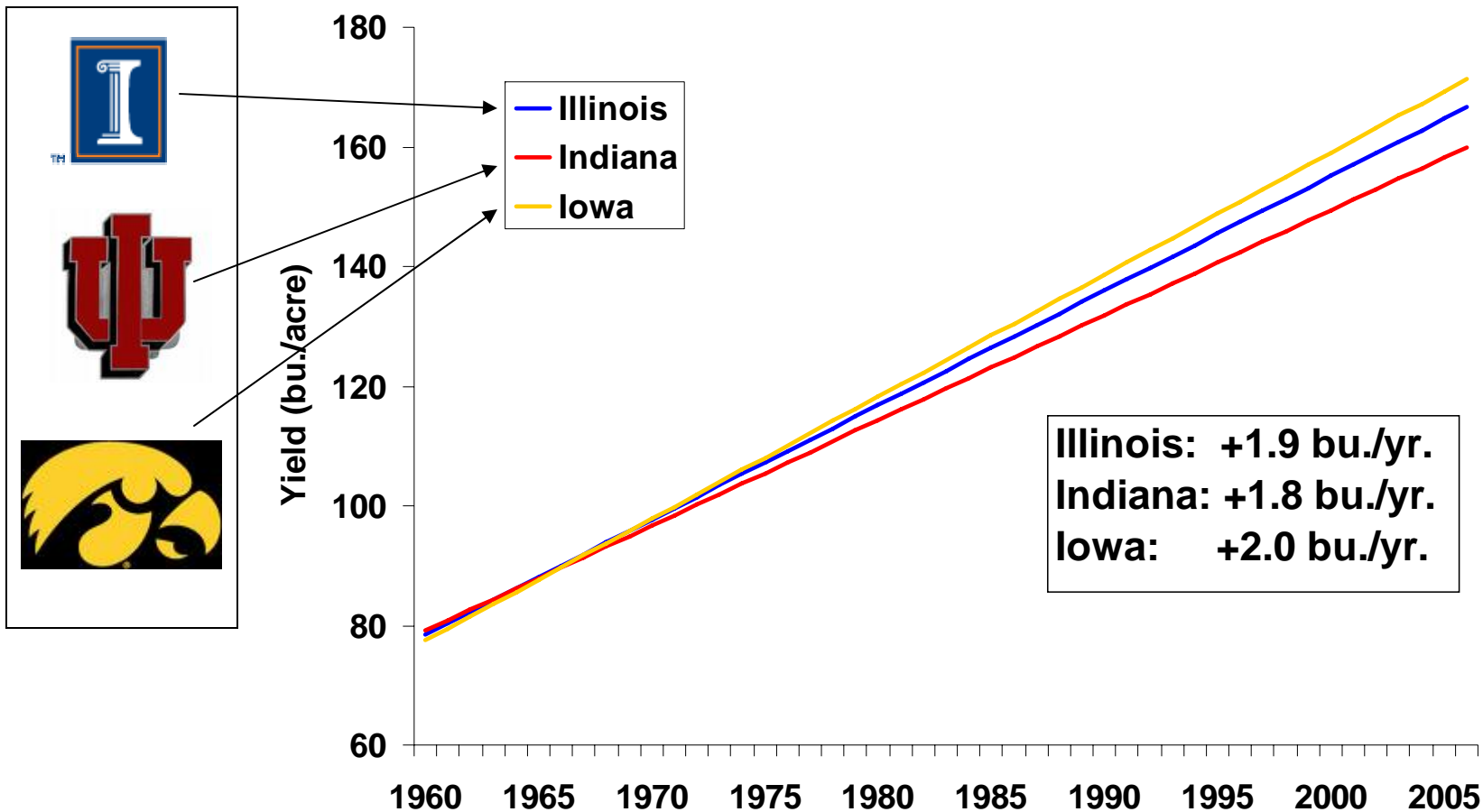
- **Yield:** State Average for Illinois, Indiana, Iowa
- **Technology:** Linear Time Trend
- **Precipitation:** Sep-Apr, May, June, July, August
- **Temperature:** May, June, July, August
- **Model Fit over 1960-2006:**
 - Illinois – 95%
 - Indiana – 94%
 - Iowa – 94%

Effects of Technology, 1960-2006



Harness the Power
of the Internet

(assuming average weather)

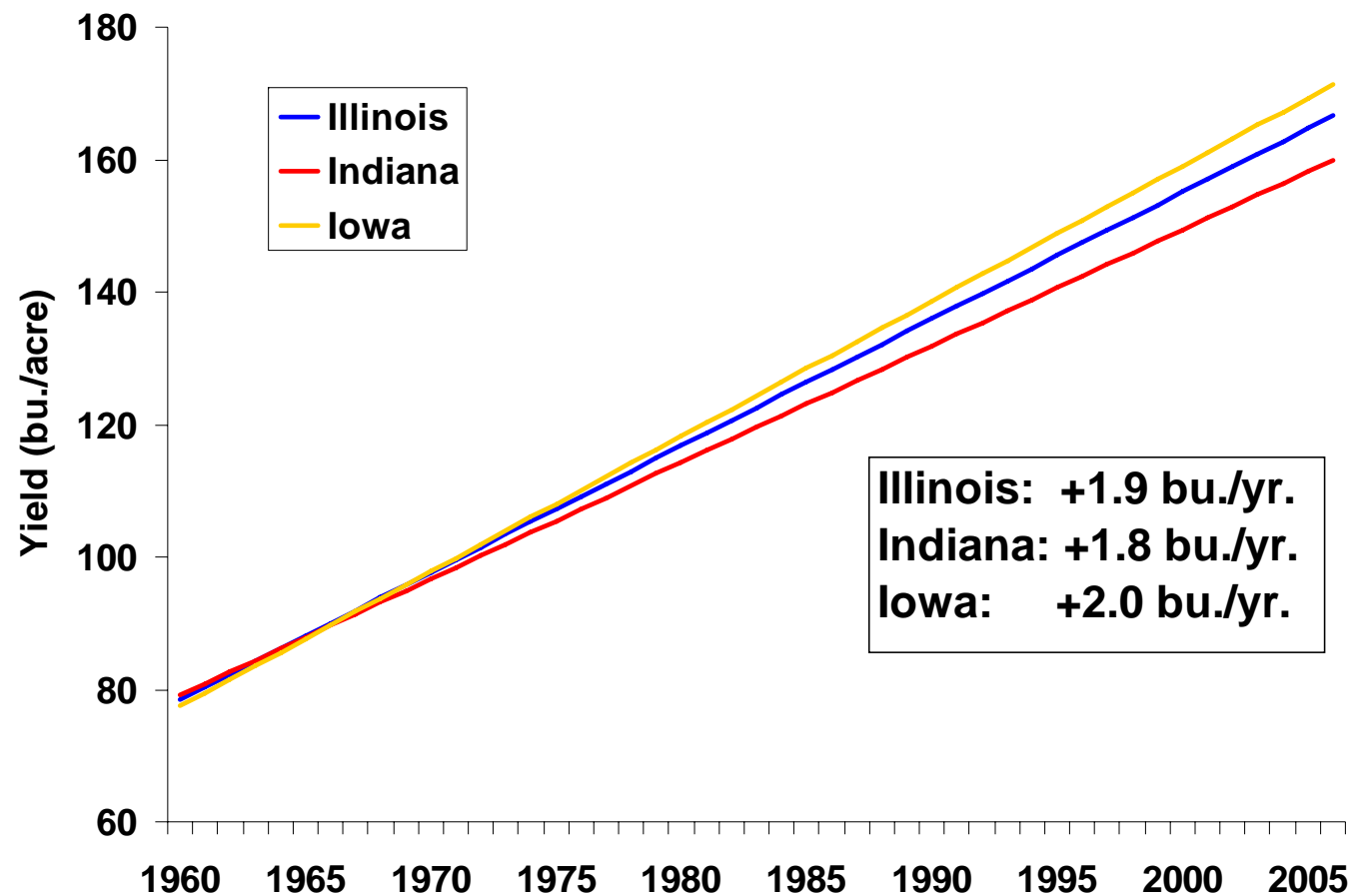


Effects of Technology, 1960-2006



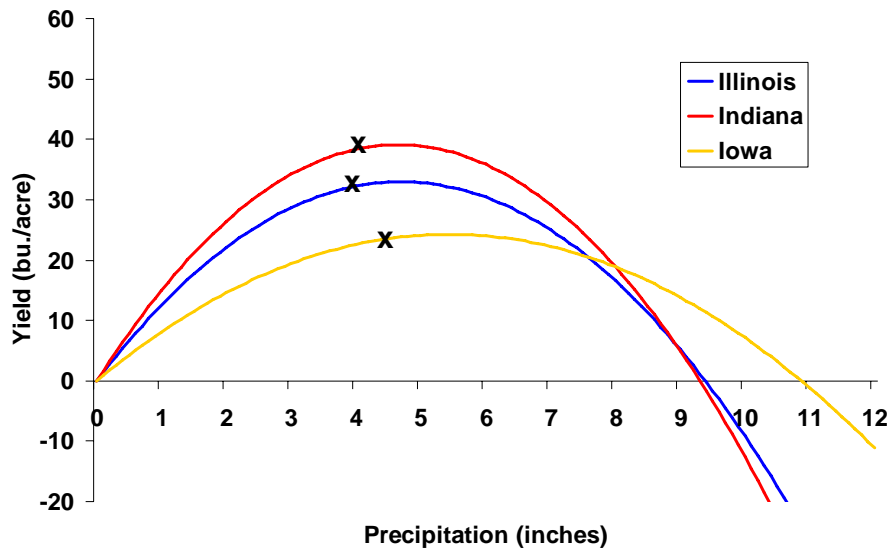
Harness the Power
of the Internet

(assuming average weather)

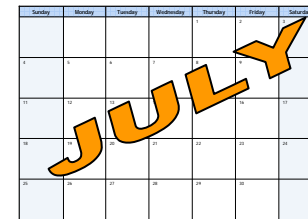
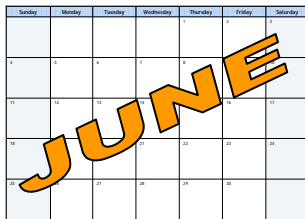
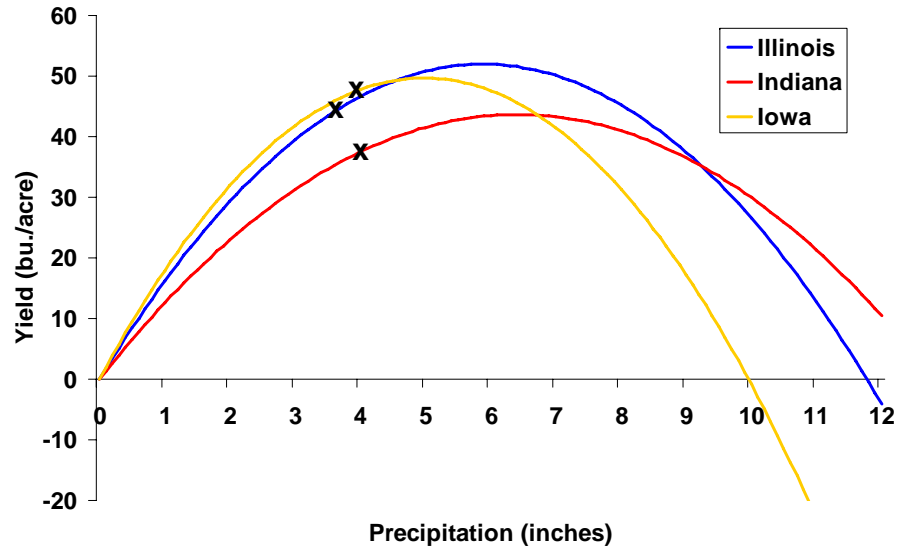


Effects of Precipitation, 1960-2006

June Precipitation

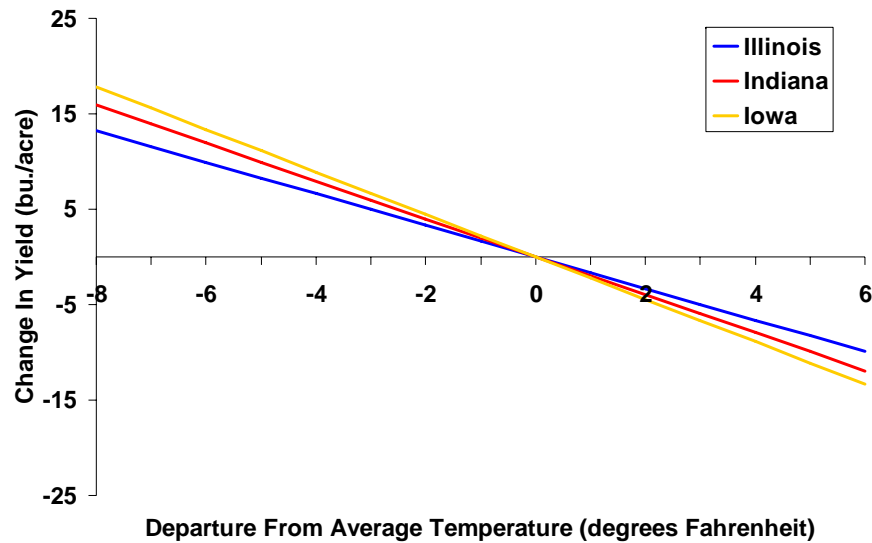


July Precipitation

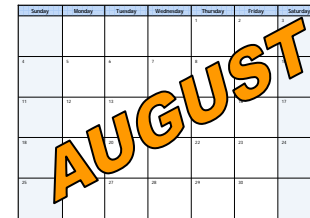
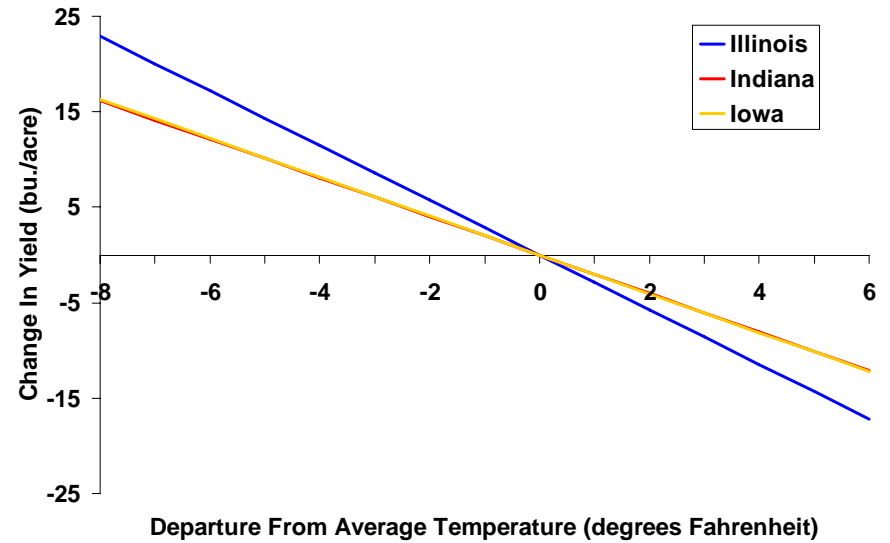


Effects of Temperature, 1960-2006

July Temperature



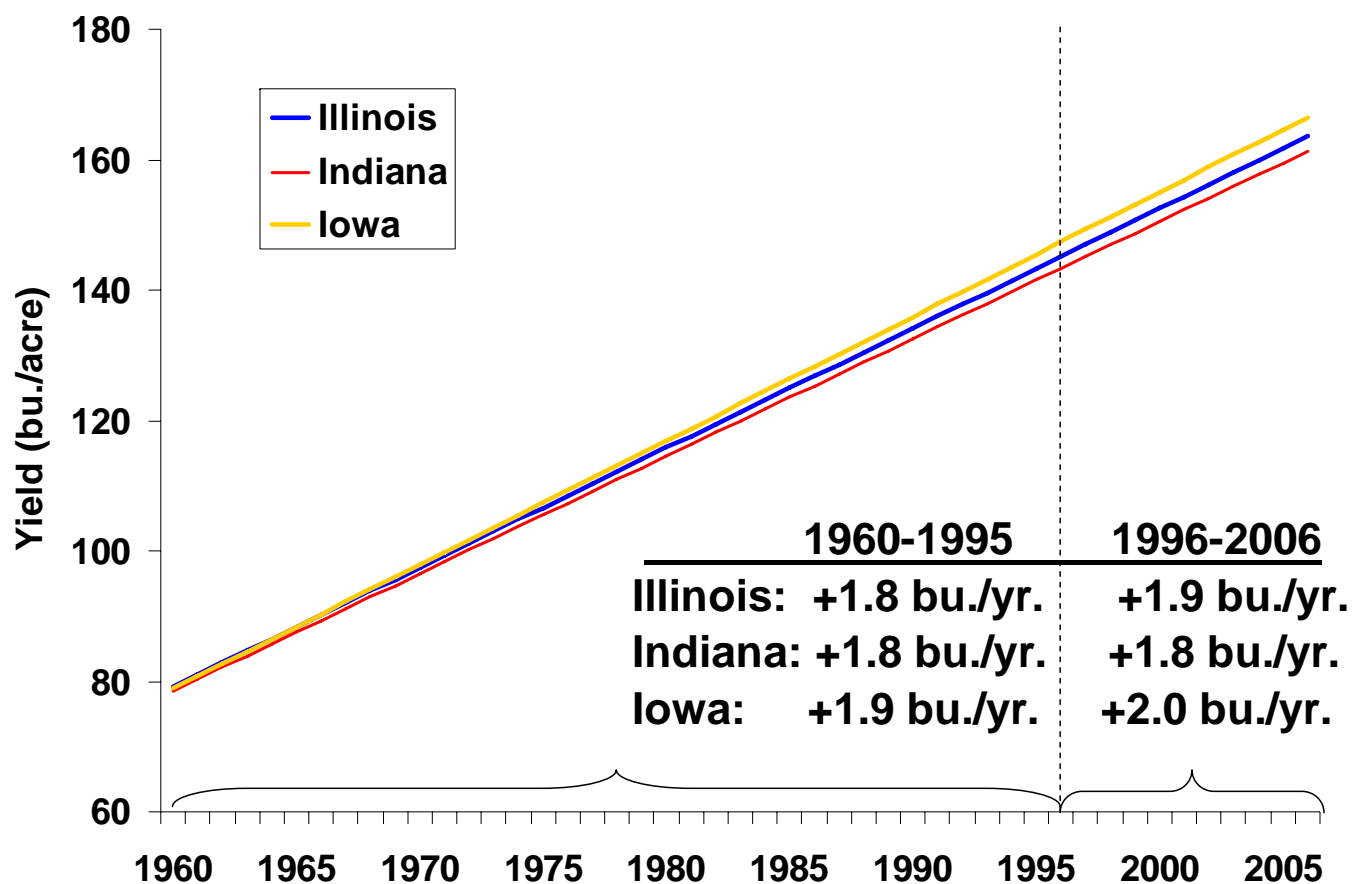
August Temperature



Are Trend Yields Increasing Faster at the State Level?



Harness the Power
of the Internet



New Seed Technology



Harness the Power of the Internet

Agrisure™ Traits: New Choices. More Control. Maximum Yield.

... traits from Syngenta provide growers with unsurpassed performance, more freedom to choose crop inputs and higher yields. Agrisure traits come with industry leading assurances and the option to participate in AgriEdge™ corn hybrids that maximize corn profitability by combining premium genetics, Agrisure traits, and superior crop protection including Touchdown Total™ herbicides, Force® insecticide, and Cruiser Extreme® seed treatment.

Monsanto's Yield Boom

Eight years ago, yields from DeKalb Genetics' seed corn could best be described as average. While some hybrids exceeded regionally, overall DeKalb trailed Pioneer Hi-Bred International by an average of 8 bu to 9 bu per acre. Much has changed since then. Today, DeKalb is gaining market share against market leader, A to Z's traits. But, there's also the company's rapidly growing pool of germplasm, which is now high-yield characteristics, says Robert Freley, chief technology officer of Monsanto Company. DeKalb yields amount they once traded, Freley says. Many farmers assume DeKalb's yield is due to Monsanto's Roundup Ready Corn 2, and YieldGard Rootworm. Freley says more than 3% of Monsanto's 2007 have been triple stacks that contain all three of the much-sought-after traits.

FARM JOURNAL Exclusive

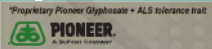


DeKalb has benefited as Monsanto's flagship corn brand. In 2004, more than 49,000 DeKalb and third-party companies showed DeKalb products outyielded other products by an average of 8.4 bu. per acre.

2007 Crop Genetics Pipeline

Discovery Gene/Trait Identification	Phase 1 Proof of Concept	Phase 2 Early Development	Phase 3 Advanced Development
ATN-1			
ATN-2			
ATN-3			
ATN-4			
ATN-5			
ATN-6			
ATN-7			
ATN-8			
ATN-9			
ATN-10			
ATN-11			
ATN-12			
ATN-13			
ATN-14			
ATN-15			
ATN-16			
ATN-17			
ATN-18			
ATN-19			
ATN-20			
ATN-21			
ATN-22			
ATN-23			
ATN-24			
ATN-25			
ATN-26			
ATN-27			
ATN-28			
ATN-29			
ATN-30			
ATN-31			
ATN-32			
ATN-33			
ATN-34			
ATN-35			
ATN-36			
ATN-37			
ATN-38			
ATN-39			
ATN-40			
ATN-41			
ATN-42			
ATN-43			
ATN-44			
ATN-45			
ATN-46			
ATN-47			
ATN-48			
ATN-49			
ATN-50			
ATN-51			
ATN-52			
ATN-53			
ATN-54			
ATN-55			
ATN-56			
ATN-57			
ATN-58			
ATN-59			
ATN-60			
ATN-61			
ATN-62			
ATN-63			
ATN-64			
ATN-65			
ATN-66			
ATN-67			
ATN-68			
ATN-69			
ATN-70			
ATN-71			
ATN-72			
ATN-73			
ATN-74			
ATN-75			
ATN-76			
ATN-77			
ATN-78			
ATN-79			
ATN-80			
ATN-81			
ATN-82			
ATN-83			
ATN-84			
ATN-85			
ATN-86			
ATN-87			
ATN-88			
ATN-89			
ATN-90			
ATN-91			
ATN-92			
ATN-93			
ATN-94			
ATN-95			
ATN-96			
ATN-97			
ATN-98			
ATN-99			
ATN-100			

300 bushels per acre corn yield no longer a pie-in-sky goal
by: Anne Fitzgerald
A generation ago, Iowa farmers would not have imagined harvesting 200 bushels of corn per acre. yields on the horizon.

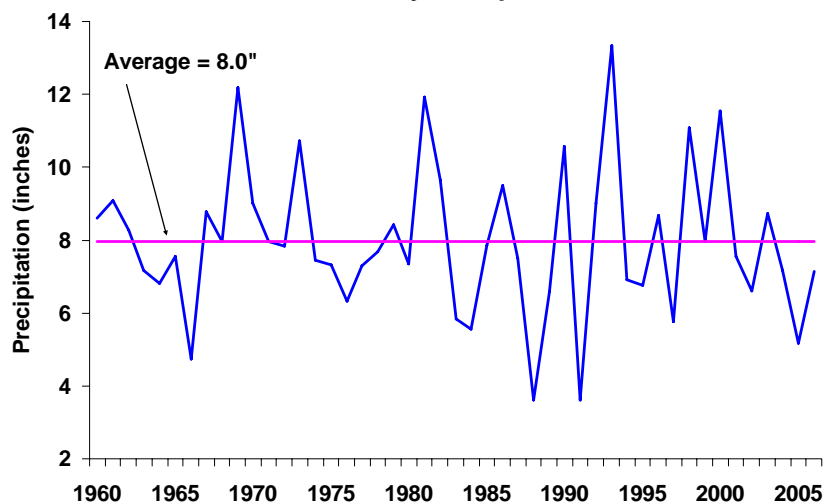


Key Illinois Weather Variables, 1960-2006

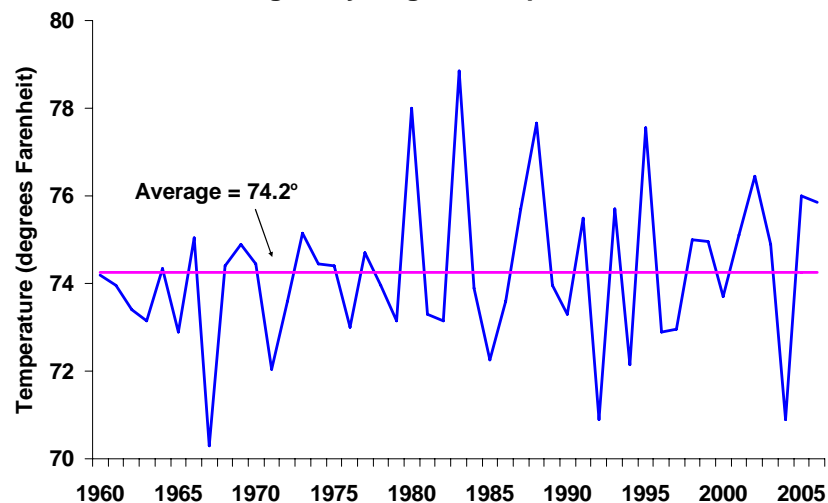


Harness the Power of the Internet

Total June-July Precipitation



Average July-August Temperature

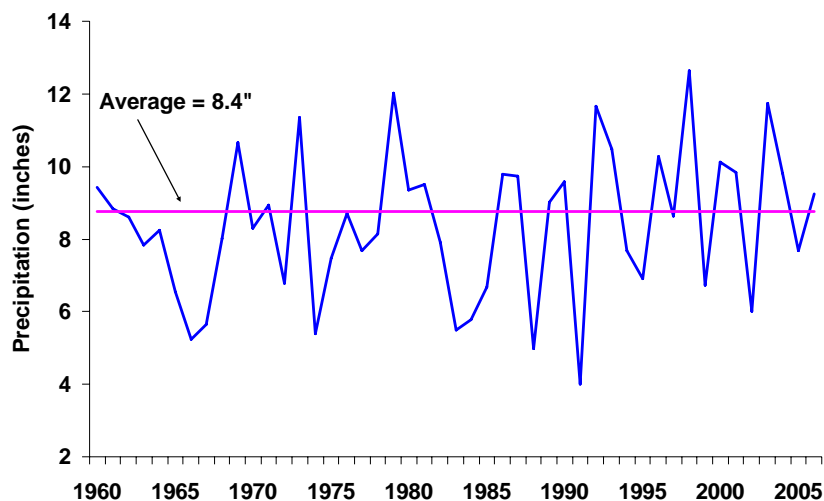


Key Indiana Weather Variables, 1960-2006

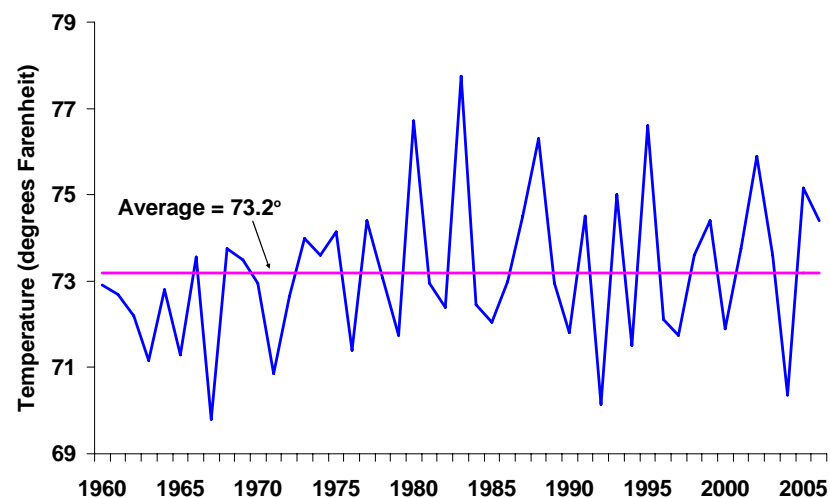


Harness the Power of the Internet

Total June-July Precipitation



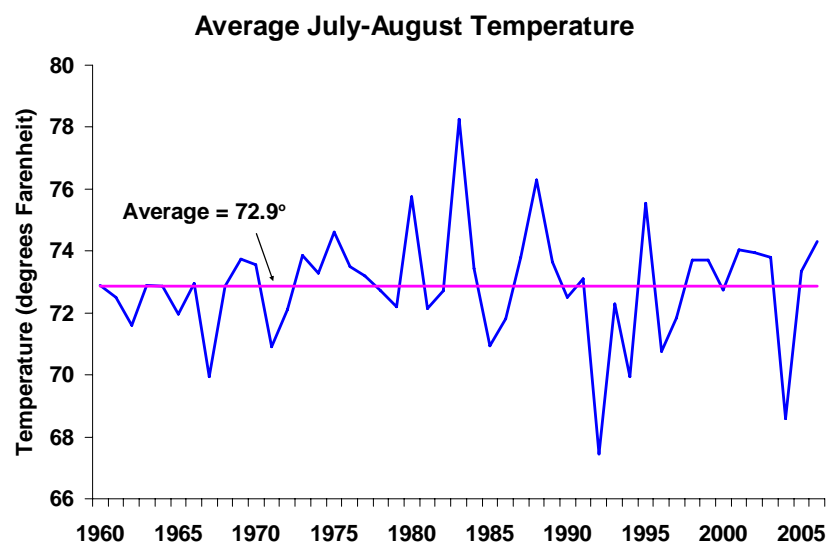
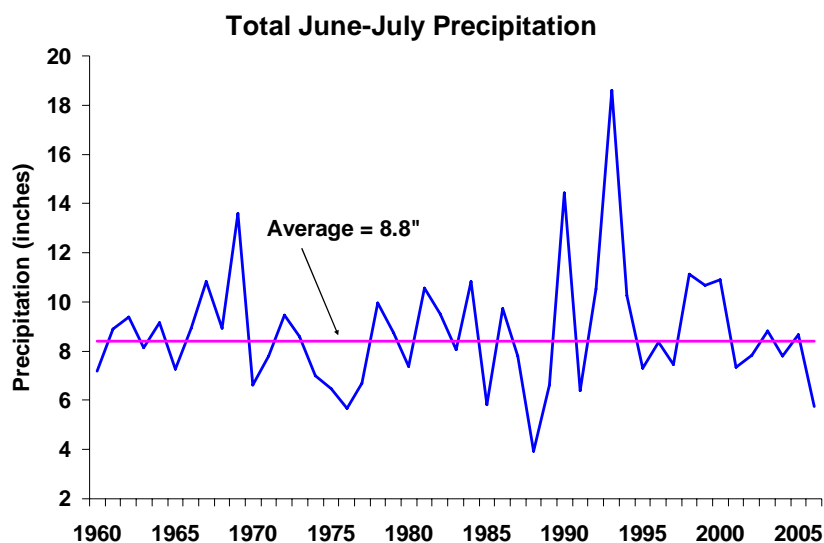
Average July-August Temperature



Key Iowa Weather Variables, 1960-2006



Harness the Power of the Internet



Have We Been Here Before?



Harness the Power
of the Internet

The United States had so little variability in weather and grain production in the past two decades (until 1974) that an attitude of complacency had developed. There was frequent reference in the early 1970's to the fact that technology had advanced to such a level that weather was no longer a significant factor in grain production.

—L. Thompson, Iowa State, 1975

Alternative Trend Yield Projections to 2030 for Illinois Corn Yields

