Success With Controlling Erosion

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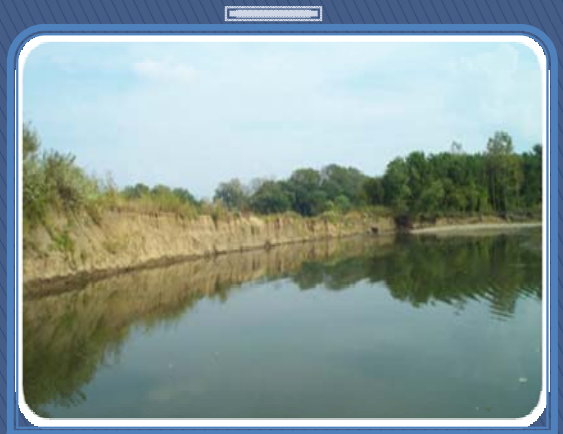
Sources of Erosion

Agriculture



Streambank

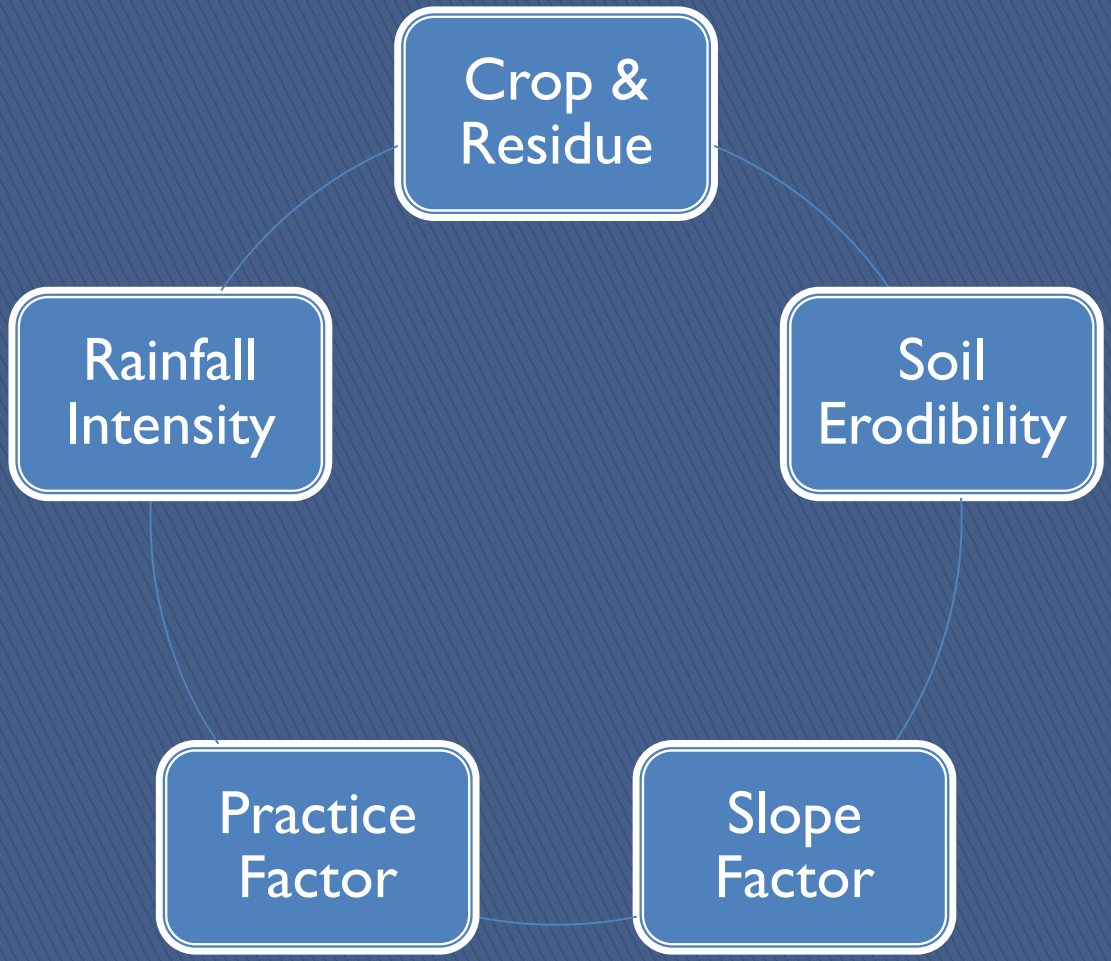
Urban

Illinois Erosion & CRM Transect Survey

- Conducted annually 1994-2001, 02, 04, 06 & 09
- Assesses
  - Crop residue management
  - Sheet & rill erosion
  - Ephemeral & gully erosion
- Windshield survey
- Conducted by SWCD, NRCS and IDOA Staff
- Collects data after crop is planted from 500 fields per county
- Statewide over 50,000 fields
- Results targeted for planning purposes

Field Data Collected

(RUSLE)



Conventional Tillage

0-15% Crop Residue

Reduced Tillage

15-30 % Crop Residue

Mulch Tillage

30+ % Crop Residue

No-till

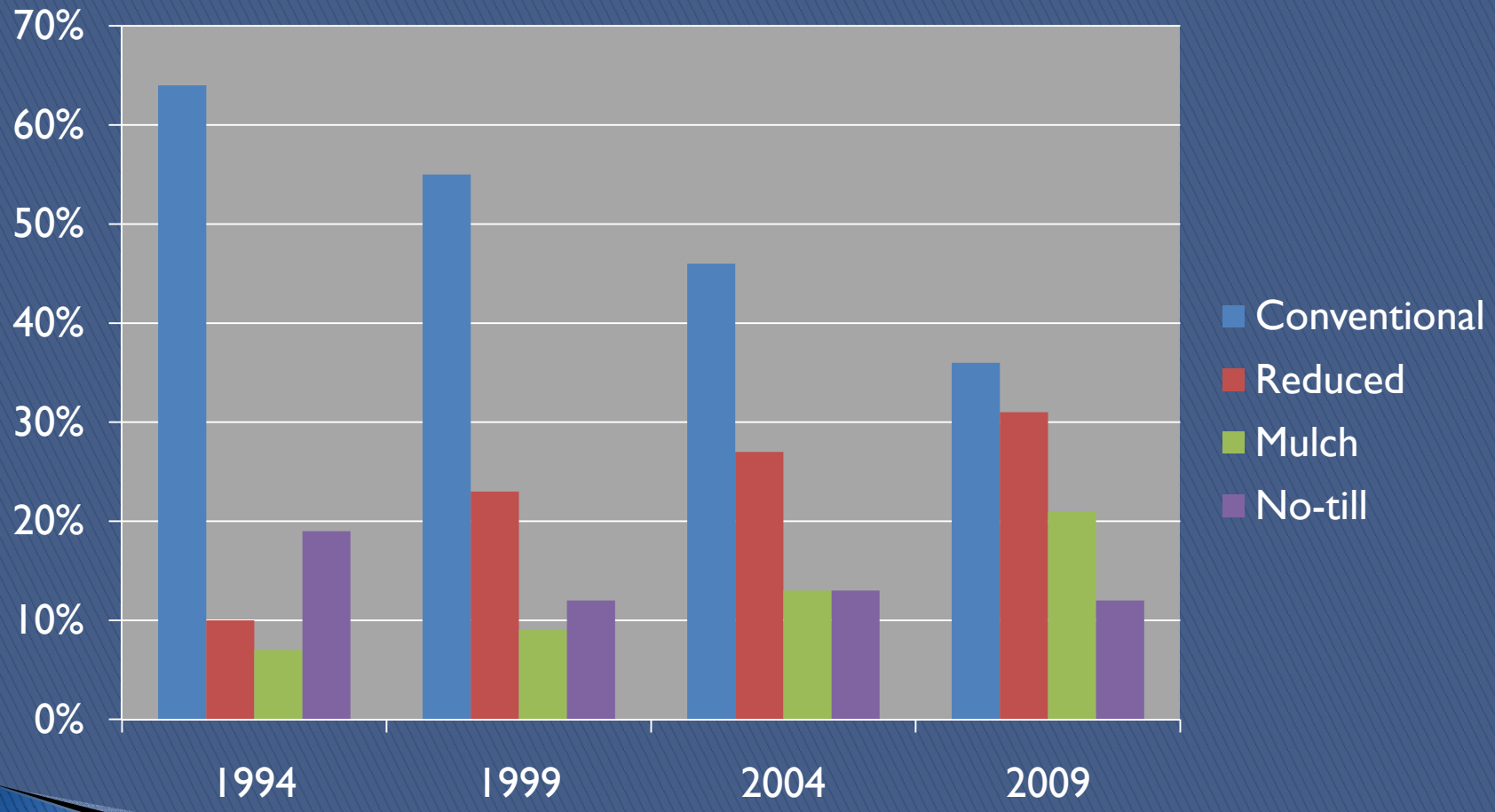
30+ % Crop Residue

Cover Crop, CRP or Hayland

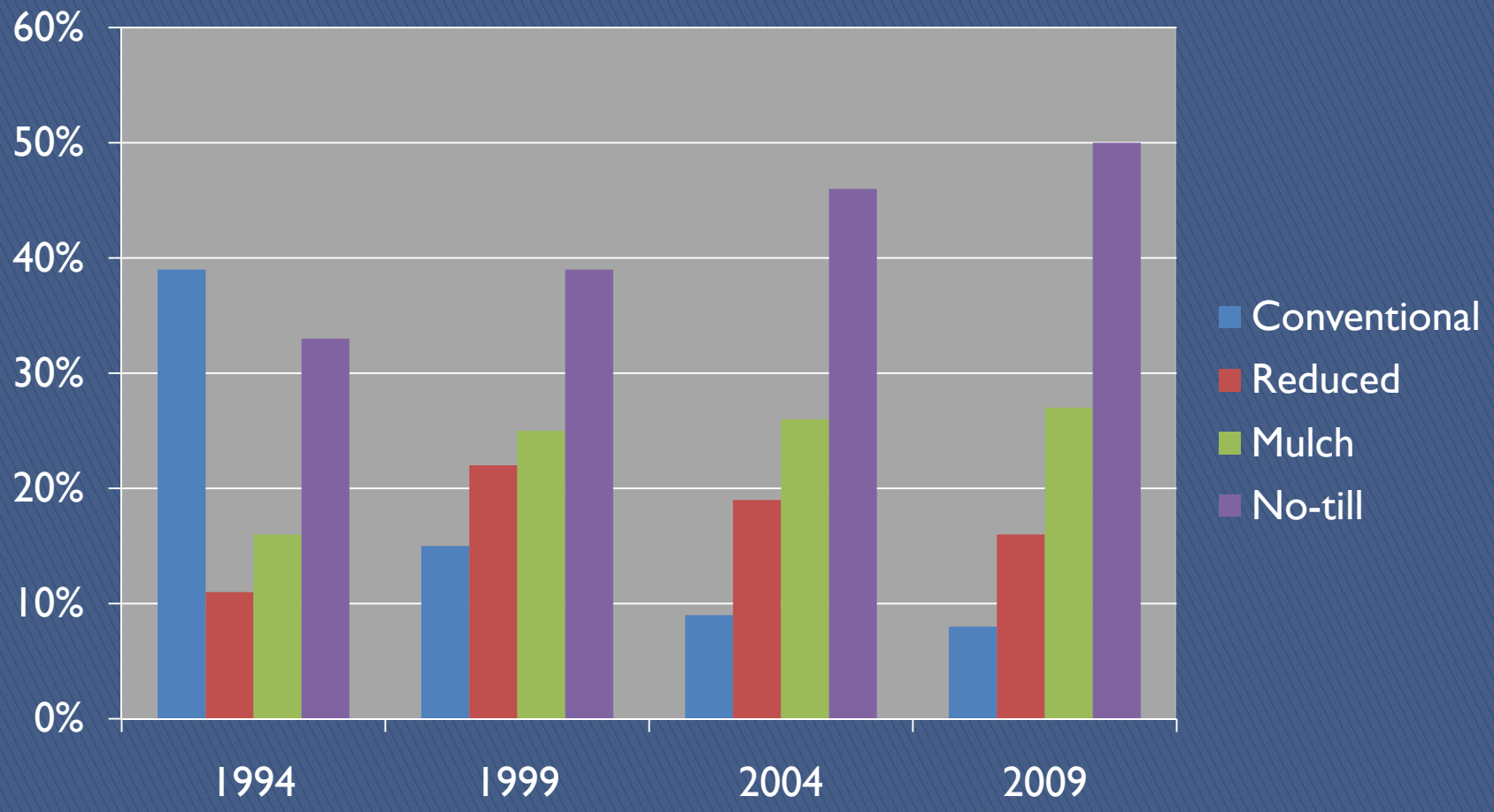
Affects of Residue Cover on Erosion

Tillage System	Residue Level	Soil Erosion (tons/yr)
Conventional	10%	13.2
Reduced-till	20%	8.8
Mulch-till	40%	4.7
No-till	60%	1.9
Cover Crop	95%	0.3

IRW
Corn Crop Tillage Systems

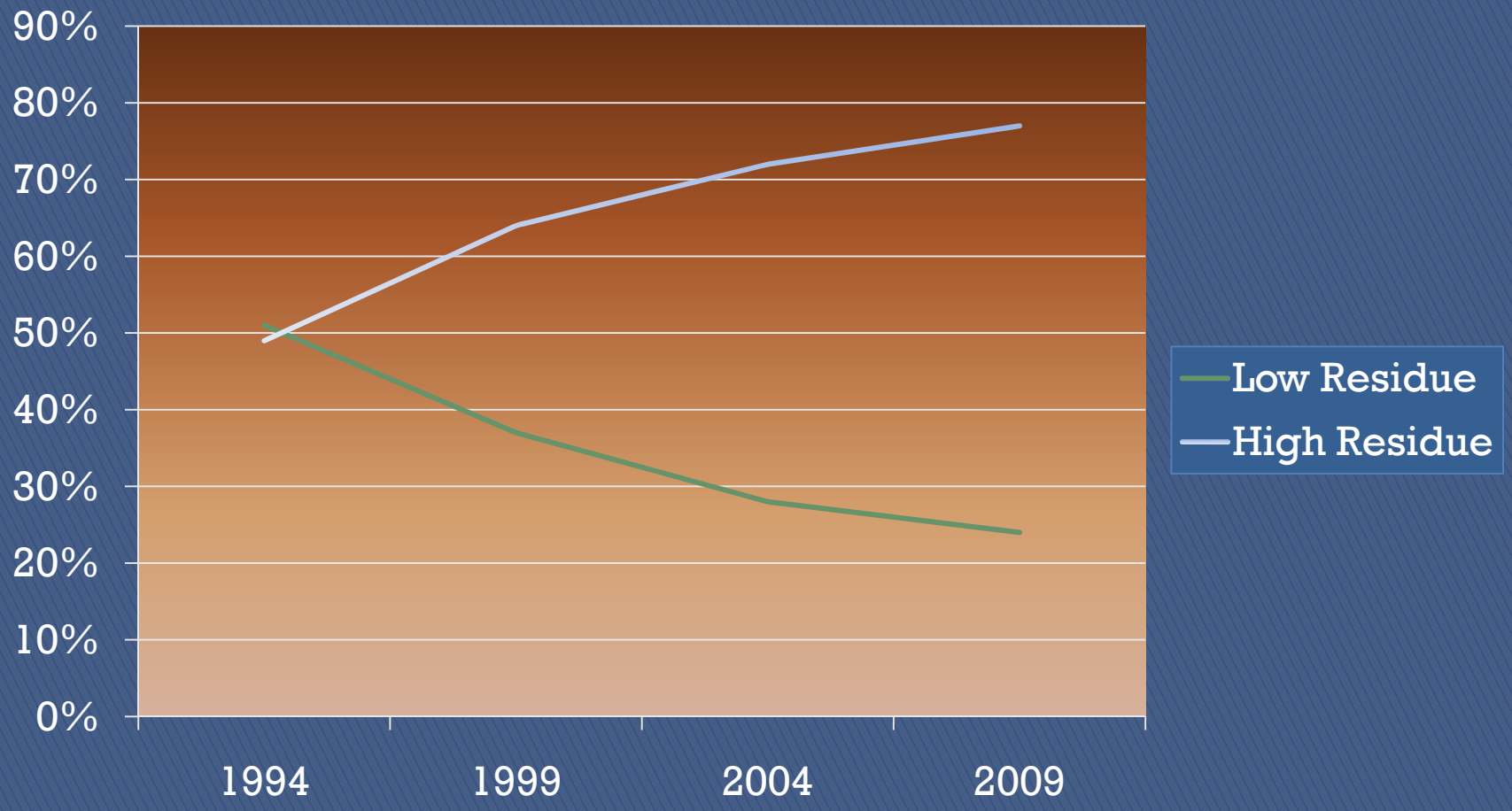


IRW
Soybean Tillage Systems



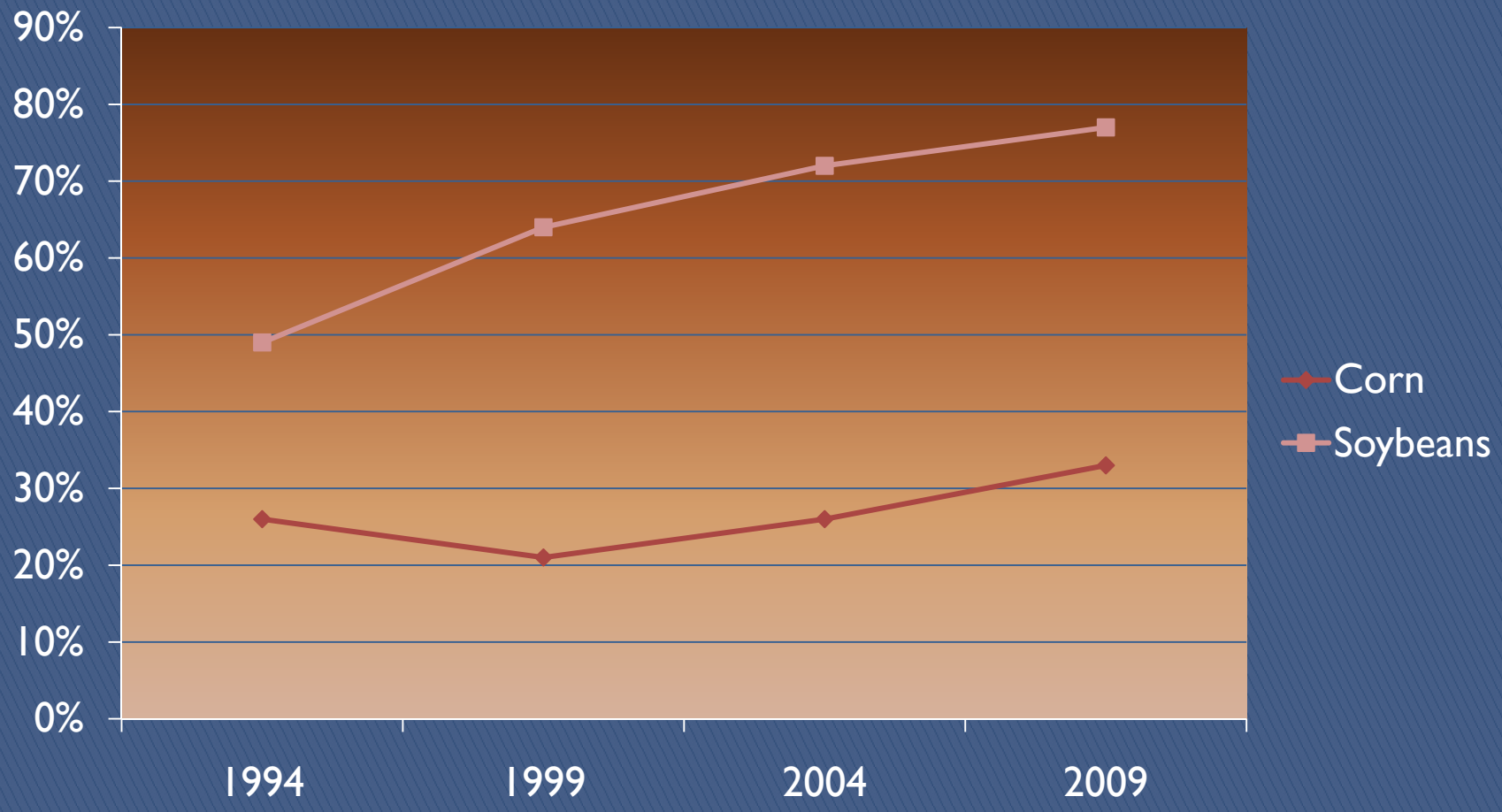
Soybean Crop Tillage Trends

High vs Low Residue



High Residue Systems

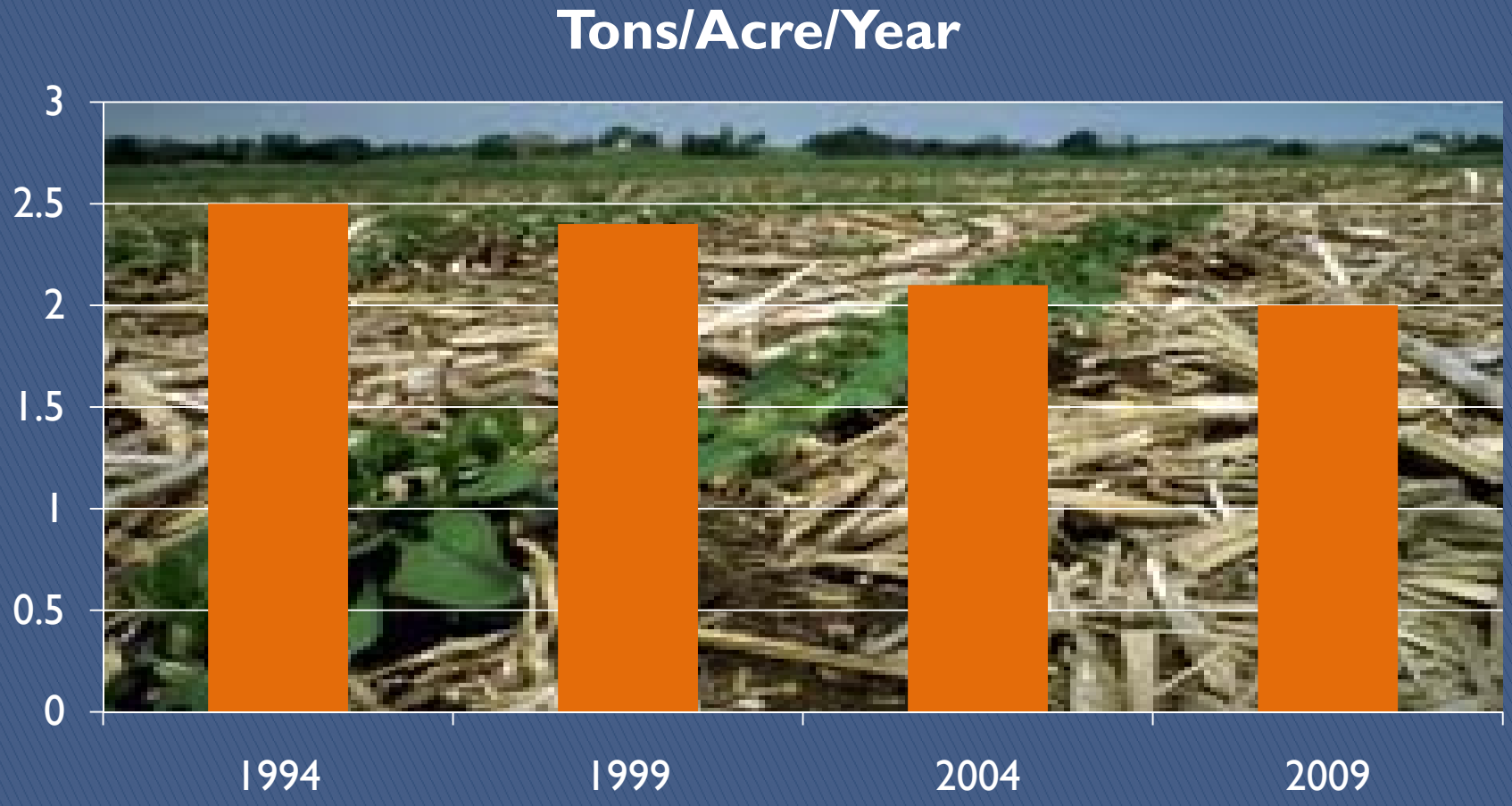
Corn vs Soybeans



Reasons for Changes in Soybean Tillage System Use

1. Herbicide technology
2. No yield reduction compared to full tillage
3. Economics
4. Erosion control

Average Sheet & Rill Erosion Rates
IRW Crop Fields



Ephemeral & Gully Erosion

- Would recommend a practice to control erosion due to concentrated flow
- No clear trend
- Averages 16-27%
- 2009 – 20%

Practices for Controlling Ephemeral & Gully Erosion

Grassed Waterways

*Reduces crop acreage

*Establishment??

WSCOBs

*Traps sediment

*User friendly

*Minimal land loss

Terraces

*Controls sheet erosion

*Long life span

FY 07 Partners for Conservation Program Erosion Control Accomplishments

	Statewide	IRW
Practices applied	1611	589
Total cost-share funds	$3.6 m	$1.3 m
Landowner investment	$2.7 m	$1.0 m
Soil saved (tons/year)	151,882	42,547
Semi-truck loads	6,903	1,933
Sediment load reduction	43,161	12,519

Streambank Erosion

- Accounts for 10-50% of sediment load
- Stabilization challenged by channel realignment & urban development
- Restoration can be expensive
- Difficult to install erosion control on contiguous segments due to landowner interest
- Limited financial assistance for cost-share & technical assistance

Changes Affecting Streambank Erosion Control

- Research & development of low-cost practices
- State & federal cost-share programs started
- Permitting process simplified
  - USACE Nationwide # 3 & 27
  - USACE Regional
  - IDNR-OWR Illinois # 9
- Technical assistance available through SWCD/NRCS

Streambank Erosion Control

Rock Riffles

Rock Riffles

Before

After

Stream Barbs

Longitudinal Stone Toe Protection

Before

After

Summary

- The amount of conventional tillage used to plant both corn and soybeans have significantly dropped since 1994
- Mulch-till and no-till (30+% crop residue) soybeans have increased 28 percentage points since 1994
- Corn fields planted by mulch-till showed a 14 percentage point increase while no-till dropped by 6 percentage points over the past 16 years
- Sheet and rill erosion on agriculture land continues a downward trend with the average erosion rate being reduced by one-half ton per acre since 1994
- Ephemeral Erosion remains constant with 20% of crop fields needing a practice to control concentrated flow runoff

Summary

- The research and development of low-cost streambank stabilization techniques combined with a simplified permitting process has improved the adoption of streambank stabilization practices

Thank You