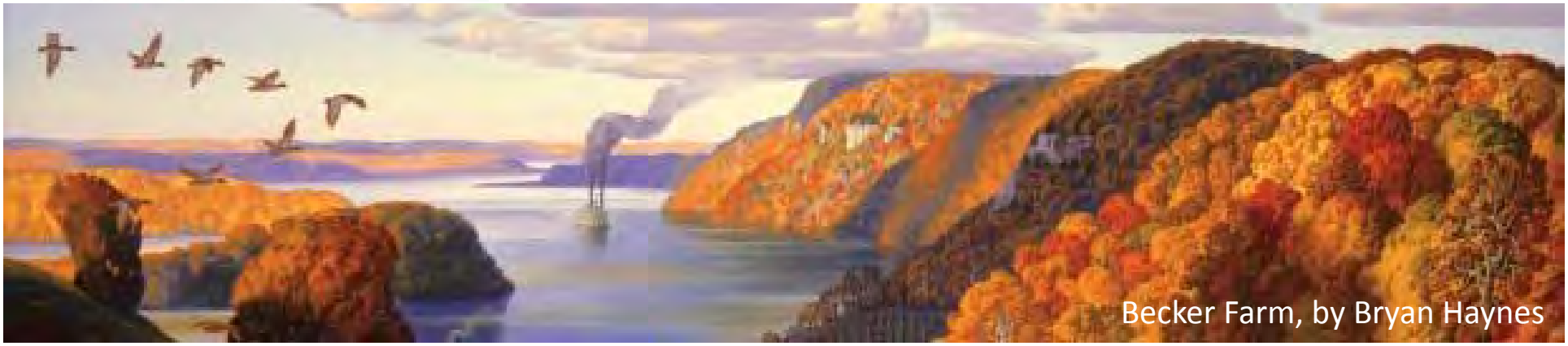
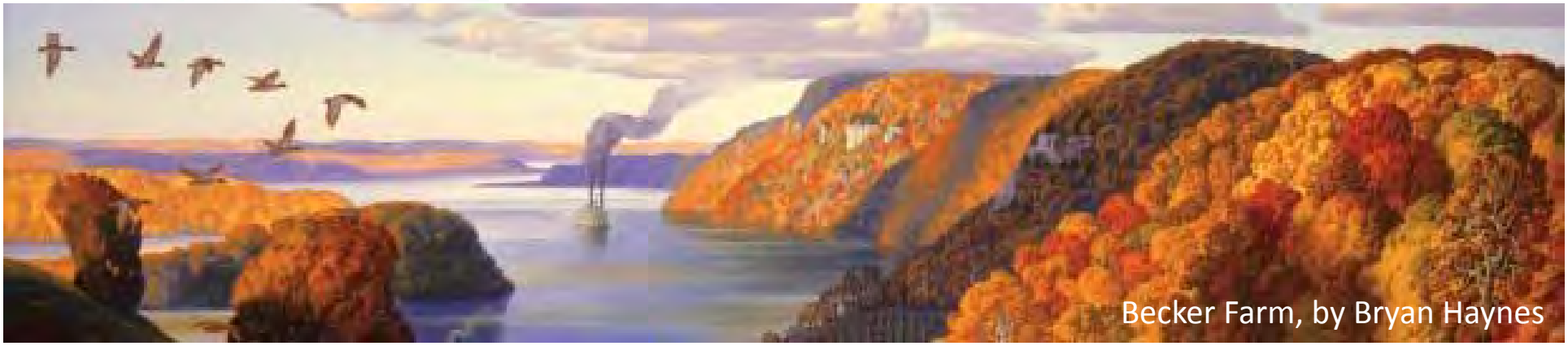
Lower Missouri River – Meeting 2 (of 6)



Agenda

1. Welcome and Introductions
2. Panel #1
   - Soil, Hydrology, Water Quality
3. Panel #2
   - Navigation and Commerce on the River
4. Panel #3
   - Farming in the Watershed
5. Wrap-Up

Goals for the Lower Missouri River



1. Talk to each other and listen to each other.
2. Develop an understanding of the different uses, issues and concerns along the river.
3. Document local concerns and create continuity amid changing state and federal activities and priorities.
4. Develop a line of communication between local residents and organizations, others up-stream, and state and federal authorities.

Lower Missouri River Characteristics – Main Channel

- Views are an amenity
- Many levees
- Competing river management interests
- Rising flood levels
- Rich bottomlands for agriculture and habitat
- Large trail network and tourism economy
- Water quality impairments generally not a concern

Lower Missouri River Characteristics - Tributaries

- Tributaries eroding
- Local flooding
- Confusion on maintenance responsibilities
- Challenging stormwater rules – for new development and on-going maintenance
- Local concerns out-weight Impairments

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Lower Missouri River Watershed Meeting

February 6, 2017

Tracy Haag

Regional Watershed & Community Services Coordinator

St. Louis Regional Office

tracy.haag@dnr.mo.gov | (314) 416-2452

Our Missouri WATERS

EAST-WEST GATEWAY Council of Governments

MONTGOMERY LINCOLN WARREN

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

- ***Mission:*** The mission of the Missouri Department of Natural Resources is to protect our air, land and water; preserve our unique natural and historic places; and provide recreational and learning opportunities for everyone.
- ***Vision for Missouri***: The Missouri Department of Natural Resources envisions a Missouri where people live and work in harmony with our natural and cultural resources, make decisions that result in a quality environment, and prosper today and in the future.

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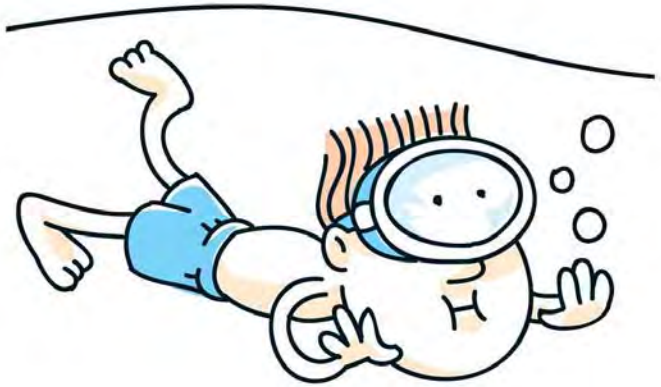
NATURAL
RESOURCES



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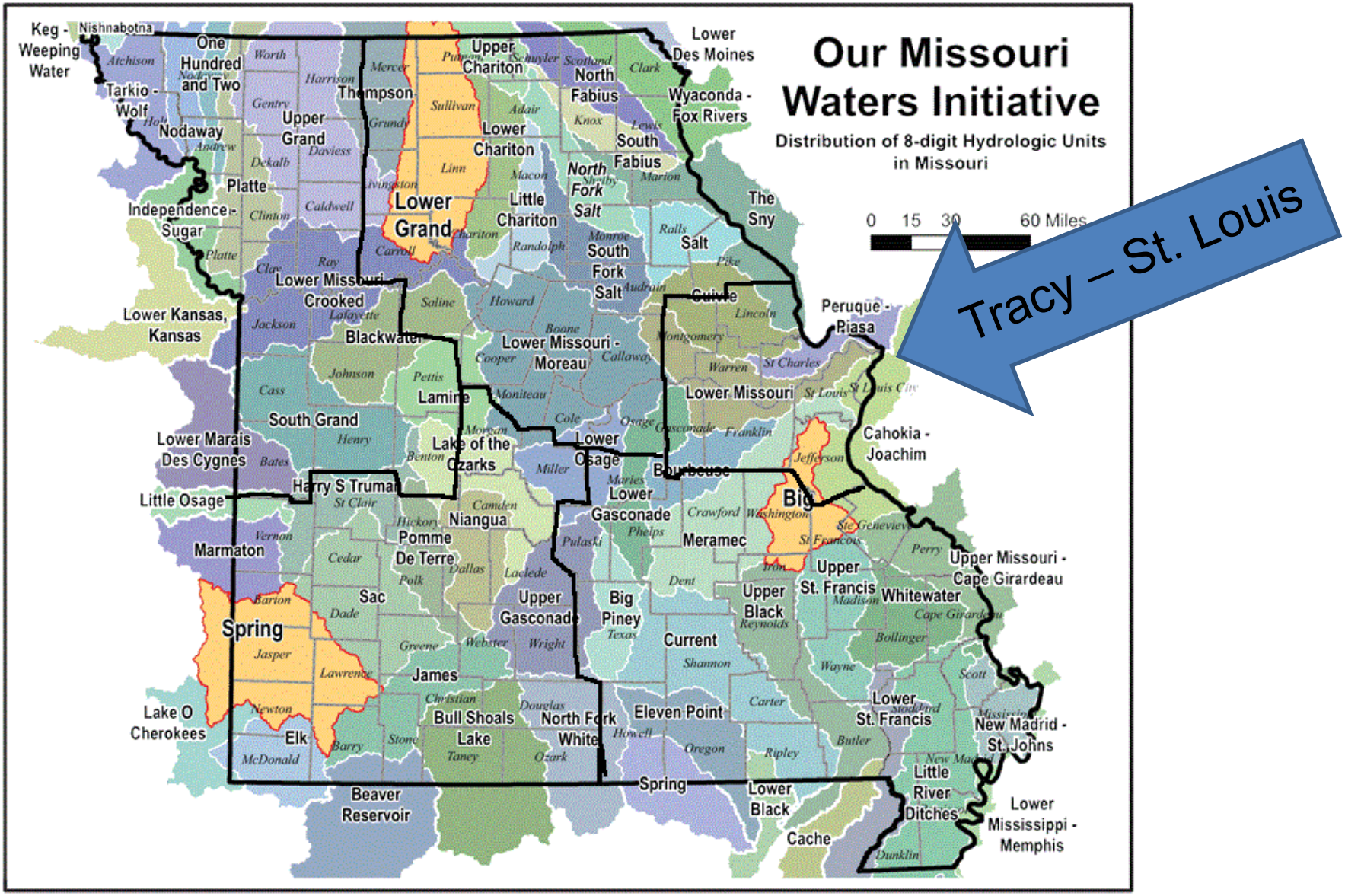

Our Missouri Waters Pilot Project 2012-2016

Goals of the Effort:

- Raise Awareness
- Receive Input
- Build Partnerships
- Coordinate Efforts
- We are also synchronizing site specific NPDES permits to expire/renew in the same year for permits in the same HUC 8 watershed
- Long term goal – maintain and improve water quality and wisely manage water supply

How do we collaborate at the HUC 8 level?

- Phased approach – it takes time!
- Partnership with the Missouri Association of Council of Governments
- Partnership with MU– Extension specialists
- Reaching out to agency partners and NGOs – federal, state, local
- Transparent process, advertised publicly and open to the public

© US ARMY CORPS OF ENGINEERS

MISSOURI RIVER WATERSHED COALITION includes Colorado, Montana, Nebraska, North Dakota, South Dakota, Kansas, and Wyoming.

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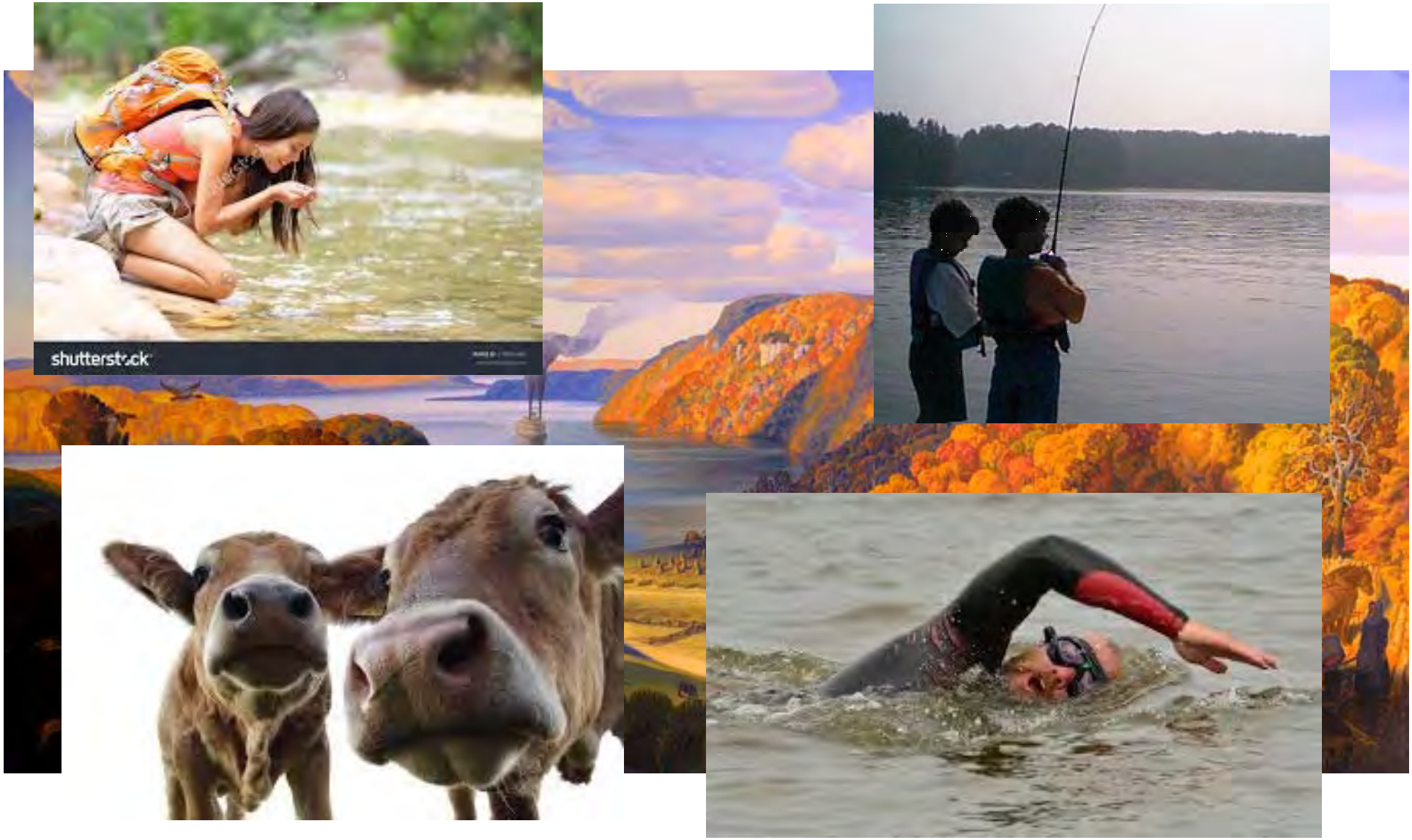
Big Muddy Missouri



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Water Quality trends on Missouri's rivers

Stream	Location	Variable*	Trend	Probable Cause
Spring R.	Waco	TDS	Increase	Coal mining, Barton County
		NO3	Increase	Unknown
Meramec R.	Sullivan	SO4	Increase	Lead mining, Iron County
Elk R.	Tiff City	SO4	Increase	Unknown
		NO3	Increase	Poultry, hog production
Missouri R.	St. Joseph	NO3	Increase	Unknown
		TSS	Decrease	Soil conservation
Mississippi R.	Thebes	NO3	Increase	Many urban, rural sources
		TSS	Decrease	Unknown
Mississippi R.	Alton	TSS	Decrease	Soil conservation

*Key -**NO3** - nitrate nitrogen, **SO4** - sulfate, **TDS** - total dissolved solids, **TSS** - total suspended solids

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Acronyms and Government Speak

Clean Water Law

HUC8

DNR

GPD

EPA

WQ

OMW

Ps & NPs

DMR

TMDL

FAC

303d

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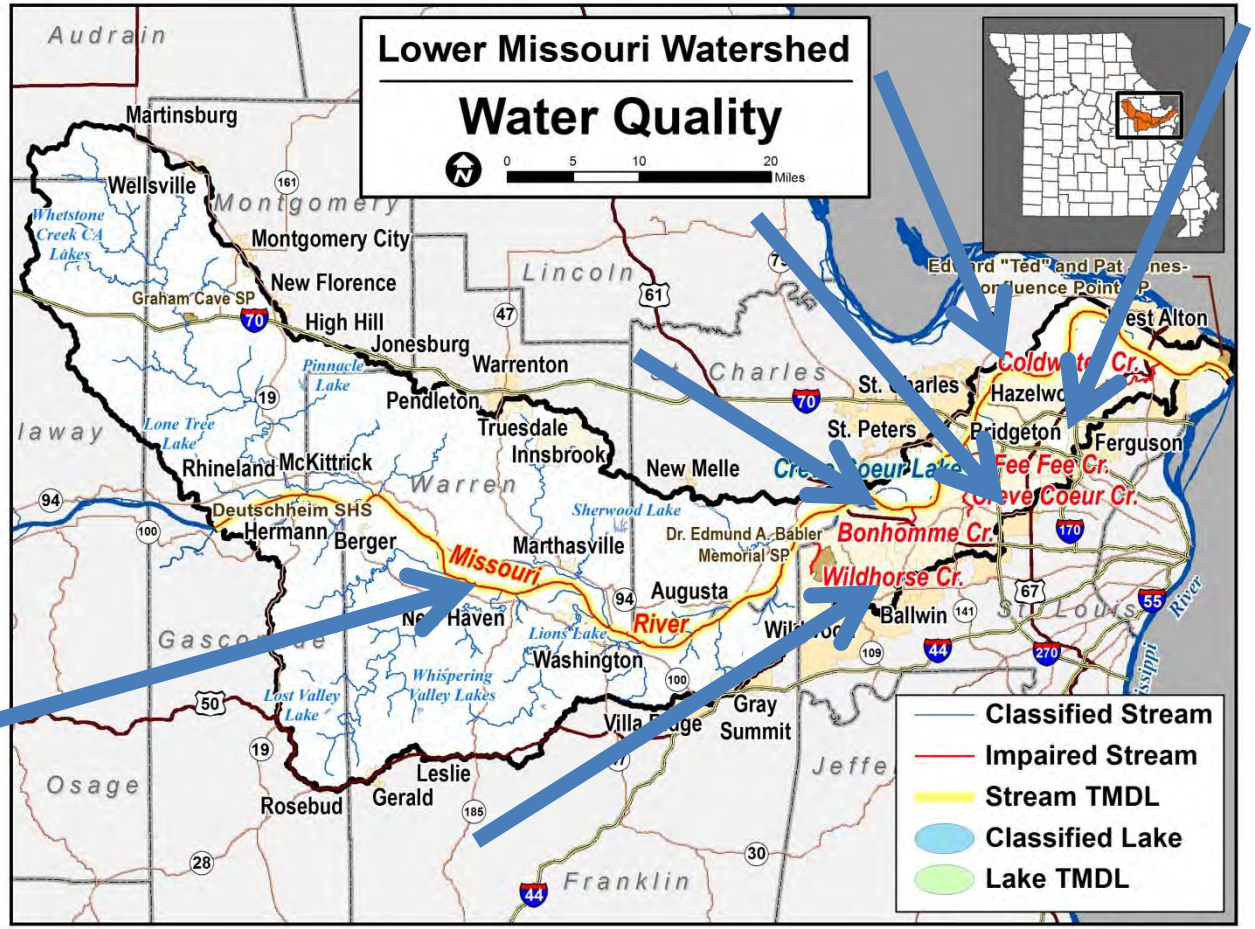
Water Quality

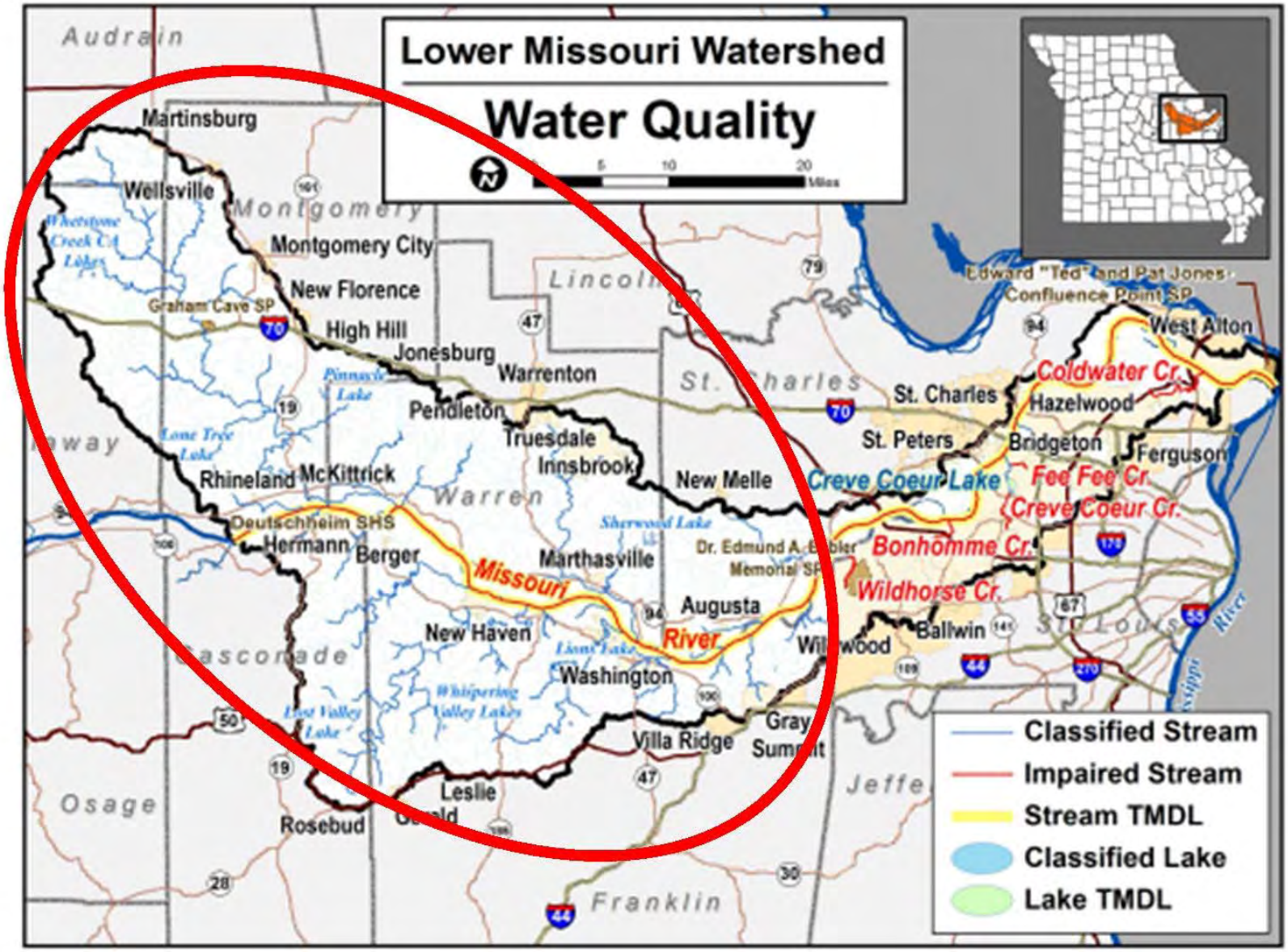
Missouri Water Quality 305(b) Integrated Report

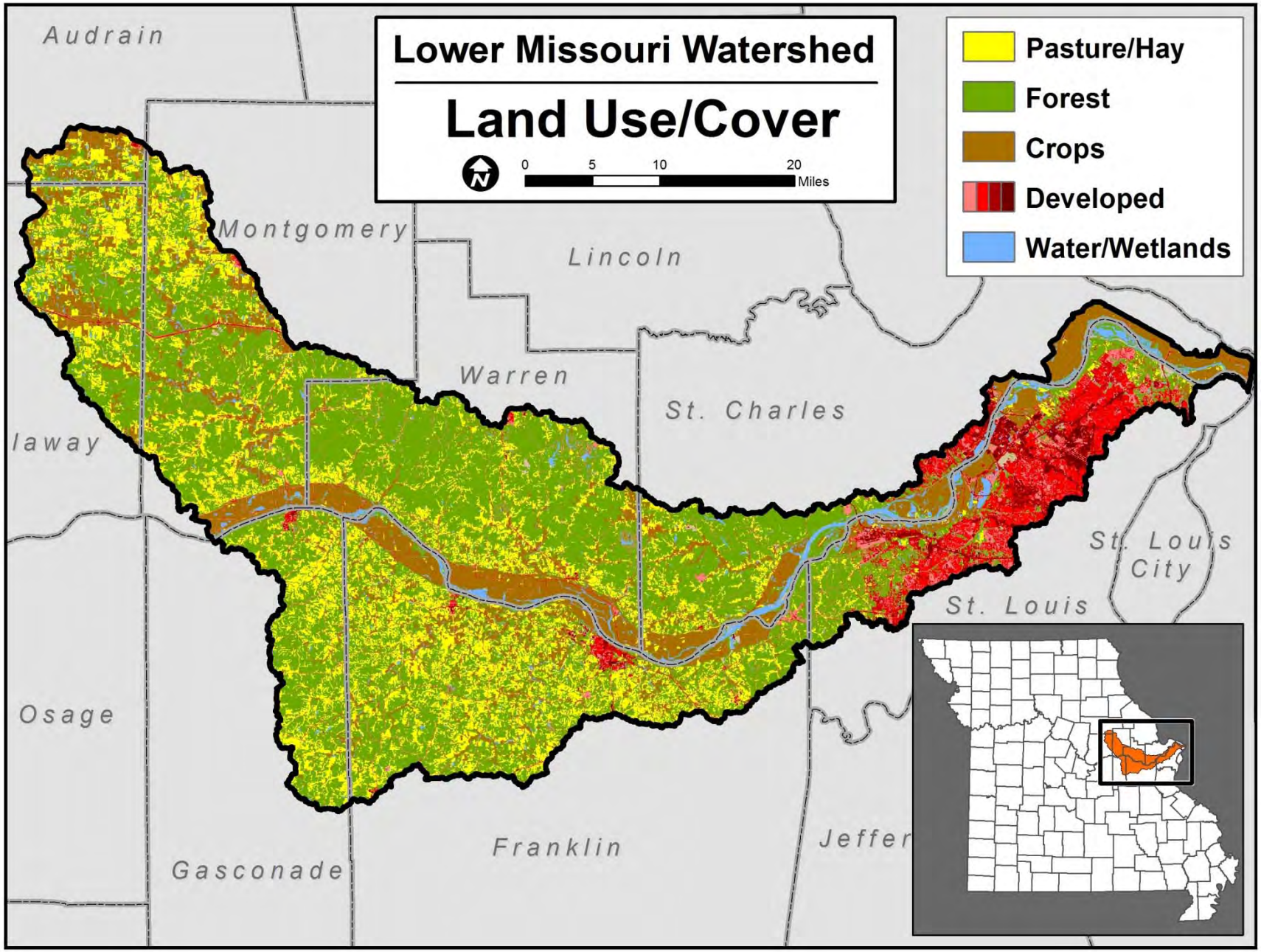
Water Quality

303d listed streams:

- Bonnehomme Creek
- Coldwater Creek
- Creve Coeur Creek
- Fee Fee Creek
- Missouri River
- Wildhorse Creek




Lower Missouri Watershed
Water Quality
Miles
Audrain
Montgomery
Lincoln
St. Charles
Warren
Gasconade
Osage
Franklin
Jeffe
St. Louis
Martinsburg
Wellsville
Montgomery City
New Florence
High Hill
Jonesburg
Warrenton
Pendleton
Truesdale
Innsbrook
Rhineland
McKittrick
Deutschheim SHS
Hermann
Berger
Marthasville
New Haven
Augusta
Washington
Villa Ridge
Gray Summit
Leslie
Rosebud
Wildwood
Ballwin
St. Peters
St. Charles
Bridgeton
Hazelwood
Ferguson
West Alton
New Melle
Graham Cave SP
Edward "Ted" and Pat Jones-Confluence Point SP
Dr. Edmund A. Babler Memorial SP
Missouri
River
Coldwater Cr.
Creve Coeur Lake
Fee Fee Cr.
Creve Coeur Cr.
Bonhomme Cr.
Wildhorse Cr.
Classified Stream
Impaired Stream
Stream TMDL
Classified Lake
Lake TMDL


Lower Missouri Watershed
Land Use/Cover
0
5
10
20
Miles
N
Pasture/Hay
Forest
Crops
Developed
Water/Wetlands
Audrain
Montgomery
Lincoln
Warren
St. Charles
laway
St. Louis City
St. Louis
Osage
Franklin
Jeffer
Gasconade

Poor Bra
70
MONTGOMERY
HARDWARE
Photo courtesy of Hadyn Spa

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FEDERAL WATER POLLUTION CONTROL ACT

(33 U.S.C. 1251 et seq.)

AN ACT To provide for water pollution control activities in the Public Health Service of the Federal Security Agency and in the Federal Works Agency, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—RESEARCH AND RELATED PROGRAMS

DECLARATION OF GOALS AND POLICY

SEC. 101. (a) The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that,

"discharge of pollutants…

…eliminated by 1985"

(3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;

(4) it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;

(5) it is the national policy that areawide treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State;

(6) it is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone and the oceans; and

(7) it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution.

(b) It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act. It is the policy of Congress that the States manage the construction grant program under this Act and implement the permit programs under sections 402 and 404 of

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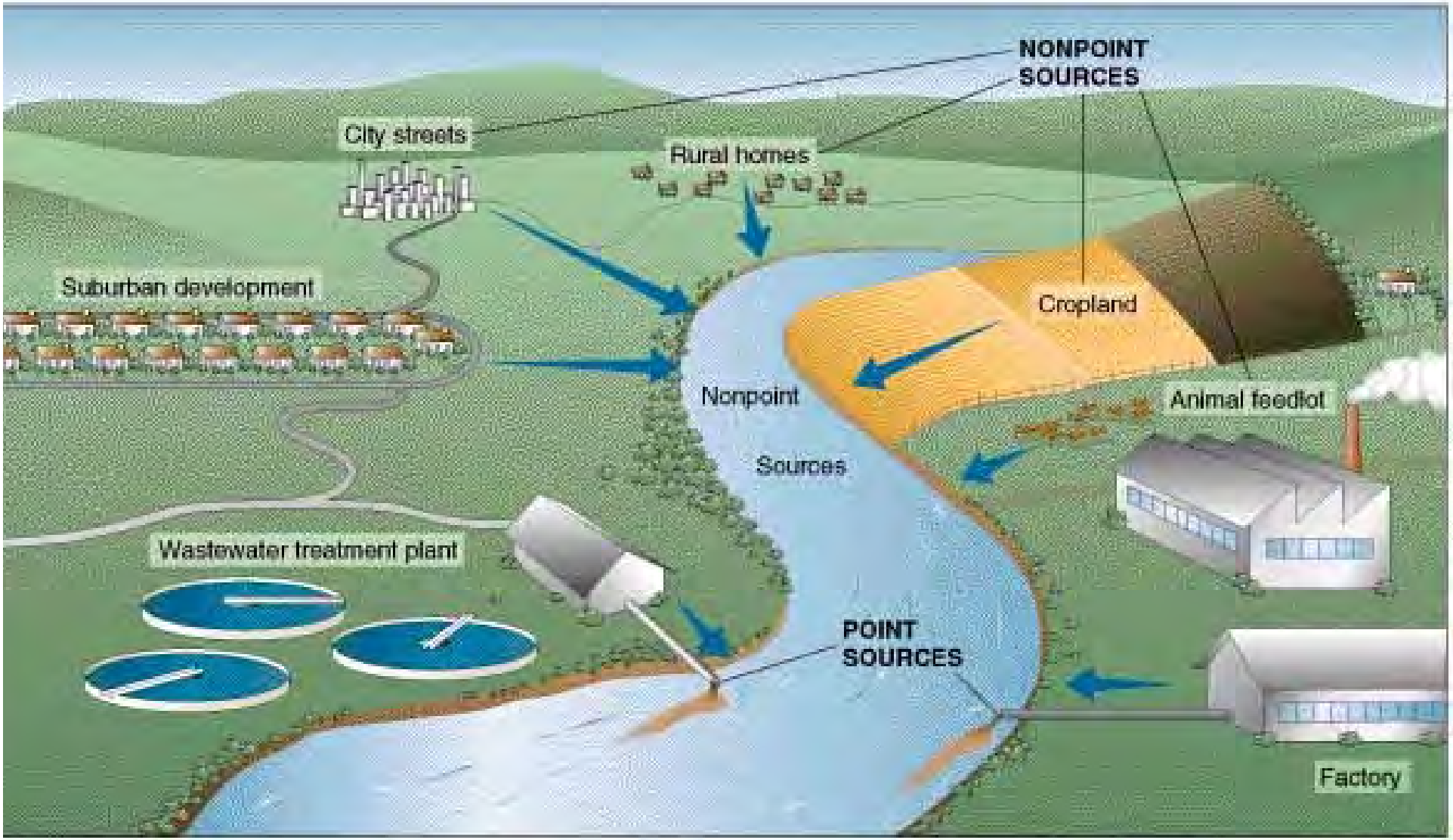
Point vs NonPoint Sources



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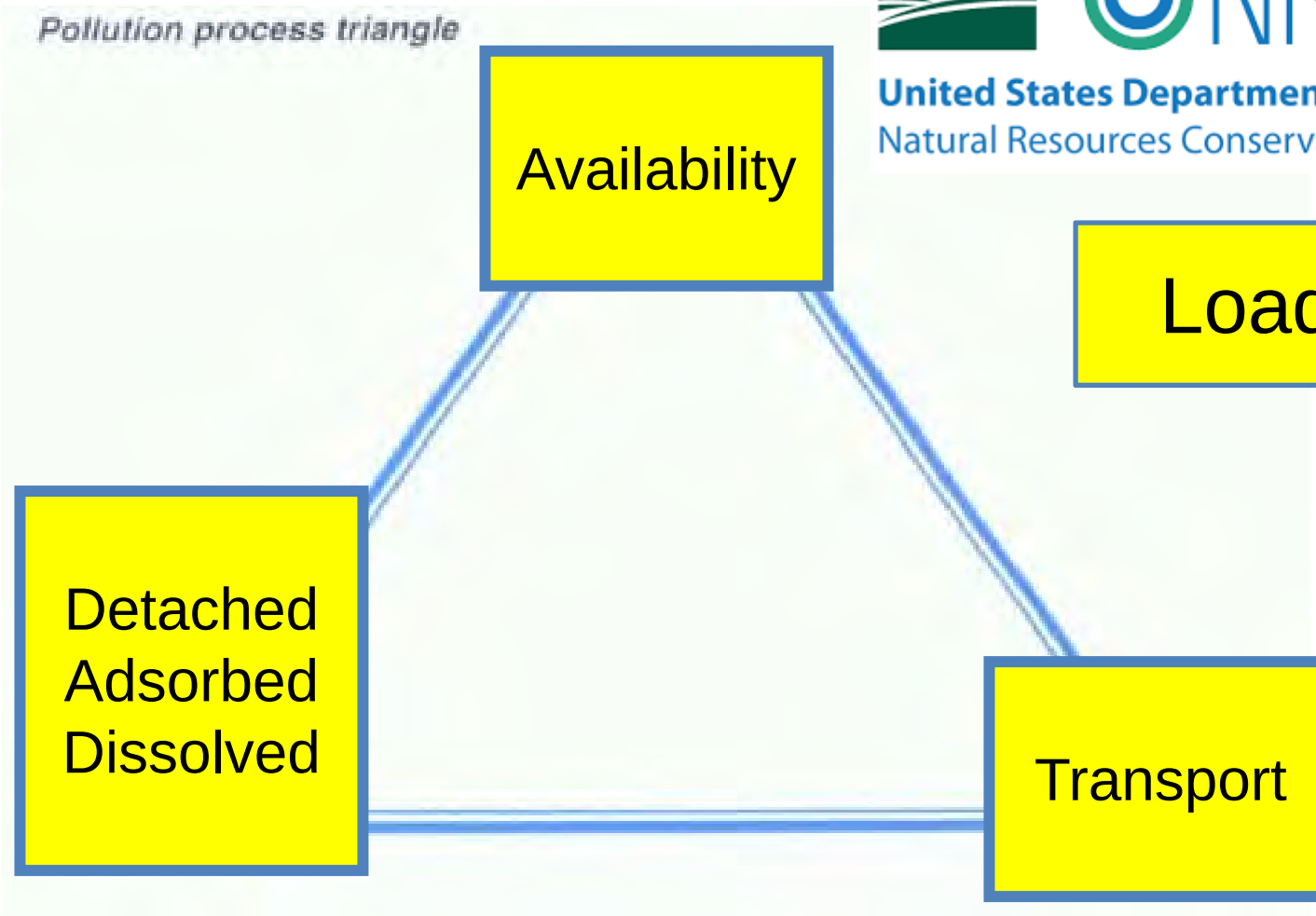
How does water pollution occur?

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service



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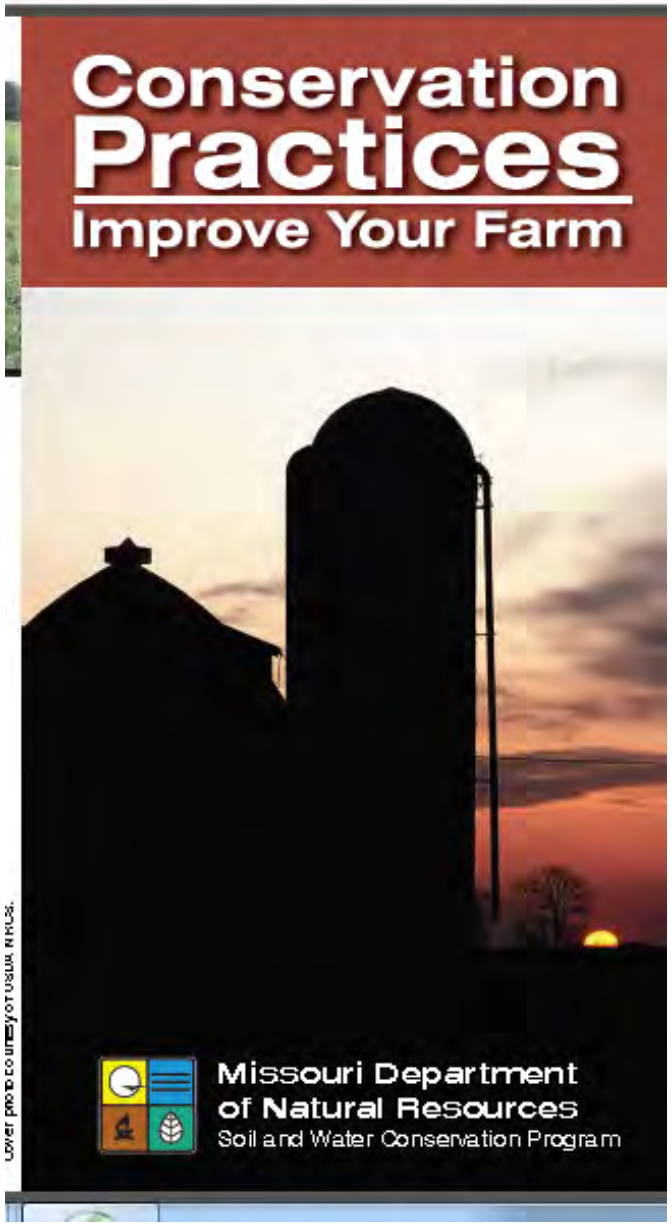
Missouri Agriculture and Forestry

- For every million dollars generated by agriculture and forestry, there is $420,000 in additional output and 4.4 jobs created in other industries.
- In 2016, agriculture, forestry and related industries in Missouri contributed:
  - $88.4 billion in total sales (including food and related products manufacturing; crop, livestock, forage and fisheries production; agricultural inputs and services; and forest products manufacturing)
  - $33 billion in value-added activity
  - $55.4 billion for the purchase of inputs
  - $17.5 billion in labor income
  - $4 billion in federal taxes
  - $2.2 billion in state/local taxes
  - 378,232 jobs

MISSOURI FARM BUREAU

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Cost-Share Practice Categories



- Sheet/Rill and Gully Erosion
- Grazing Management
- Irrigation Management
- Nutrient and Pest Management
- Sensitive Areas
- Woodland Erosion

Voluntary conservation practices can save you time and money and increase your farm's production while protecting the overall natural environment of the state.

Nonpoint source reductions

"Nearly 75 percent of farmers have already changed some farming practices to help reduce the delivery of nonpoint source pollutants. "

www.nrcs.usda.gov

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Flood of '93

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Water quality depends on soil quality

SOIL AND WATER CONSERVATION DISTRICTS

Successful Implementation

MISSOURI DEPARTMENT OF NATURAL RESOURCES

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

MISSOURI FARM BUREAU

MISSOURI NATURAL RESOURCES

SOIL AND WATER CONSERVATION DISTRICTS

MISSOURI DEPARTMENT OF dhss HEALTH AND SENIOR SERVICES

MoDOT

MISSOURI STREAM TEAM

MONTGOMERY LINCOLN WARREN

MISSOURI DEPARTMENT of AGRICULTURE

CONSERVATION DEPARTMENT MISSOURI

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Protecting watersheds: What You Can Do

- Watershed, Lake or River Association
- Stream Team
- Planting trees
- Shore up stream banks
- On-site Wastewater improvements
- Implement conservation practices

MISSOURI STREAM TEAM

MACOG
Missouri Association of Councils of Government

USDA NRCS

MISSOURI
ON-SITE WASTEWATER GRANT-LOAN PROGRAM

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Thank you!

Got questions? Call or email!

Tracy Haag

St. Louis Regional Watershed Coordinator

Missouri Department of Natural Resources

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(314)416-2452

Our Missouri WATERS

Water Quality

Producer Thoughts, Attitudes & Actions

UNIVERSITY OF MISSOURI
Extension

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1980's
Recognized need for:

Producer Focused, Water Quality Programming

Jerry Carpenter, 1st MU State WQ Specialist

Natural Resources Environmental Team

MU Agronomists & Ag Engineering staff working with MO DNR

Developed and Implemented State-wide Programming

- Secondary Containment Systems

  On-farm fertilizer & pesticide storage

- Residential Waste Management

  Home lagoons & septic systems

- Land Application of Bio-Solids

  Municipal treatment facility waste

1990's

Water Quality Focus Team

Bob Broz, State WQ Specialist

- On-Farm Fuel Storage Spill Management Plans
  - Producer self-assessment & plan development
- Pesticide Movement
  - Best Management Practices Survey w/ Training

2000's

On-Farm Research

- Fertilizer placement in row-crops

  Maintain yield while reducing fertilizer mobilization

- Cover Crops

  Nutrient sequestering & soil health

Soil Health

Soil Health Assessment Center

Analysis of long-term cover crop plots revealed need to supplement soil characterization lab.

MU SHAC is 1 of 2 public Soil Health Centers in the nation.

Soil Health Assessment Center
University of Missouri

Service in the Land Grant Tradition

Quantitative—Measure indicators of Soil Functions
- Physical
- Chemical
- Biological

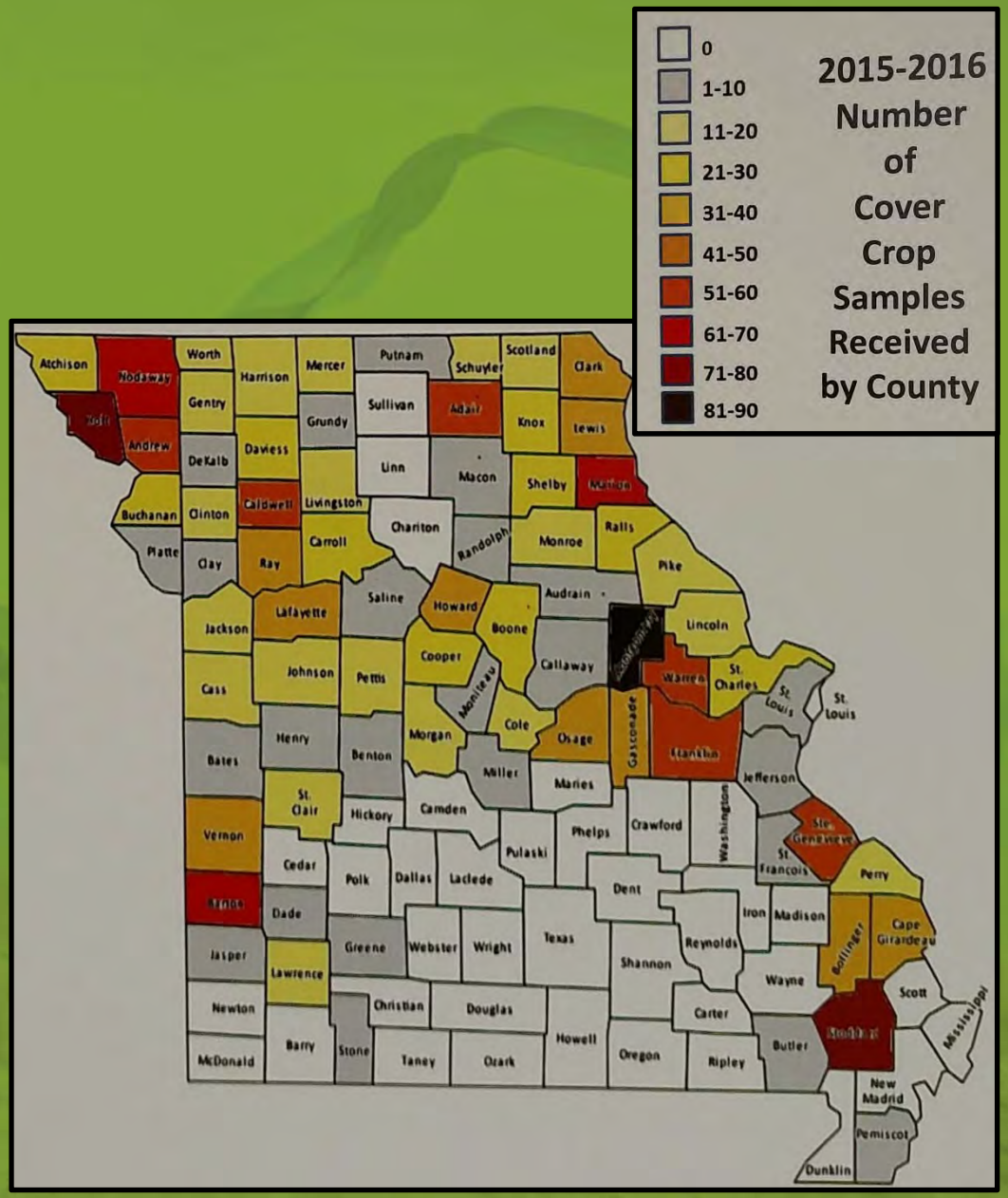
Soil Specific—Compare soil indicator values to
- Native benchmark soils
- Fields with similar soils

Prescriptive—Identify limiting soil attributes

Evaluative—Compile database
- Evaluate progress
- Evaluate management effectiveness

Soil Health Sampling

- Joint NRCS / MU Extension Effort
- Soil & Water Conservation Districts managing cover crop contracts
- MO DNR providing sample analysis cost-share
- Highest statewide sampling density in counties of Lincoln, Warren and Montgomery



EC Region MU Extension Pesticide Use & Water Quality Survey 2014-2017

Preliminary Results Survey Study of Producers

Thoughts, Attitudes & Actions

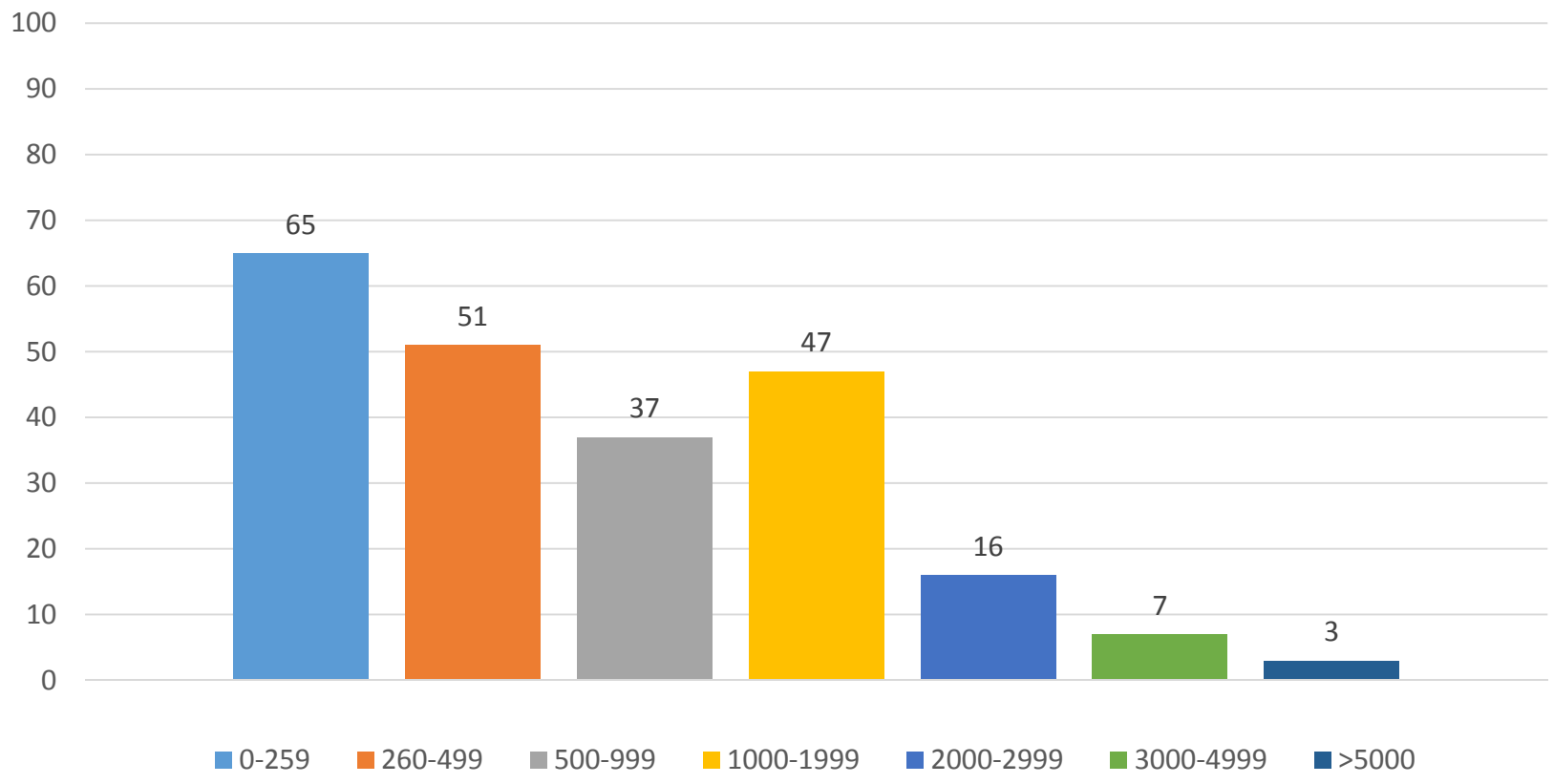
2014-2017

Rich Hoormann, MU Extension Horticulture Specialist
Matt Herring, MU Extension Agronomy-Natural Resources Specialist
Rusty Lee, MU Extension Agronomy Specialist

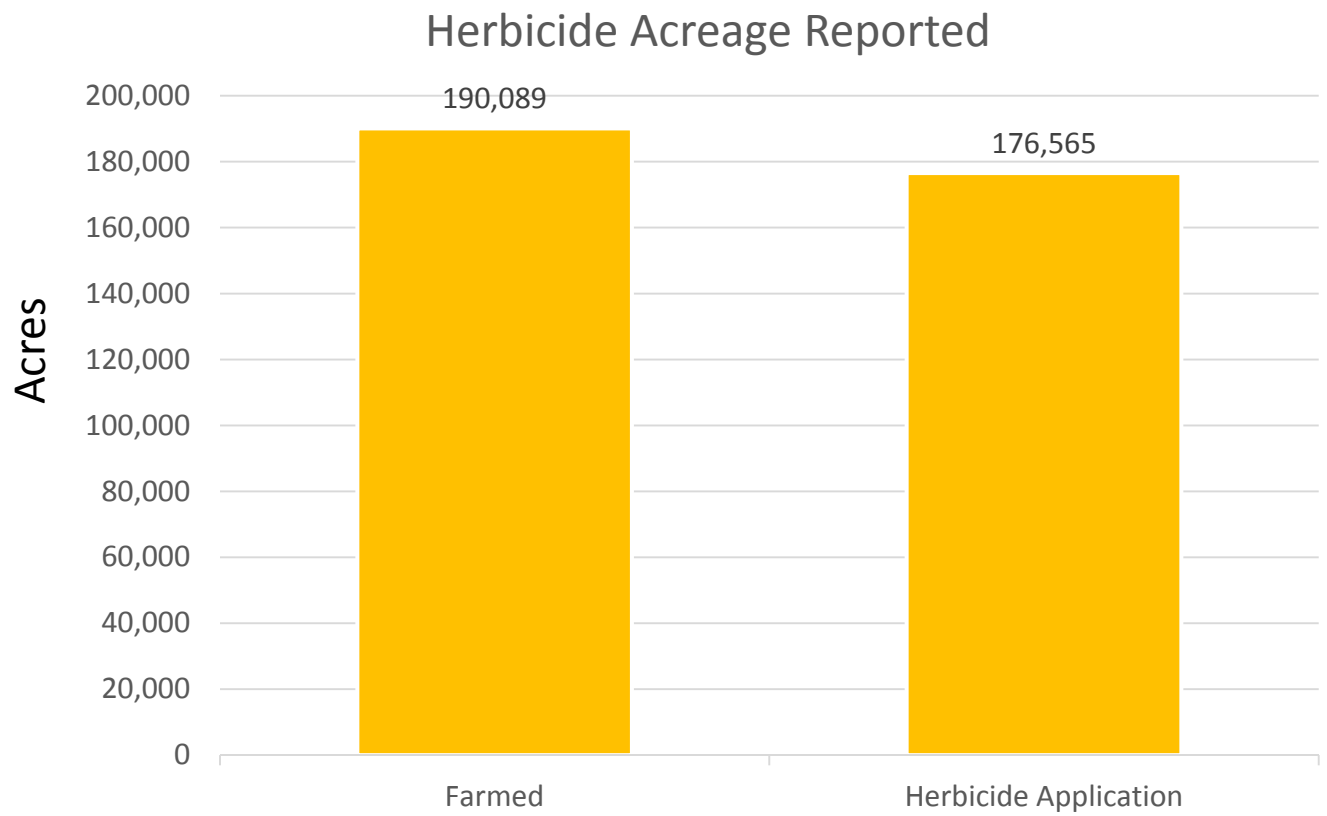
Cover Crops Integration
Building Resilient Crop Systems

UNIVERSITY OF MISSOURI Extension

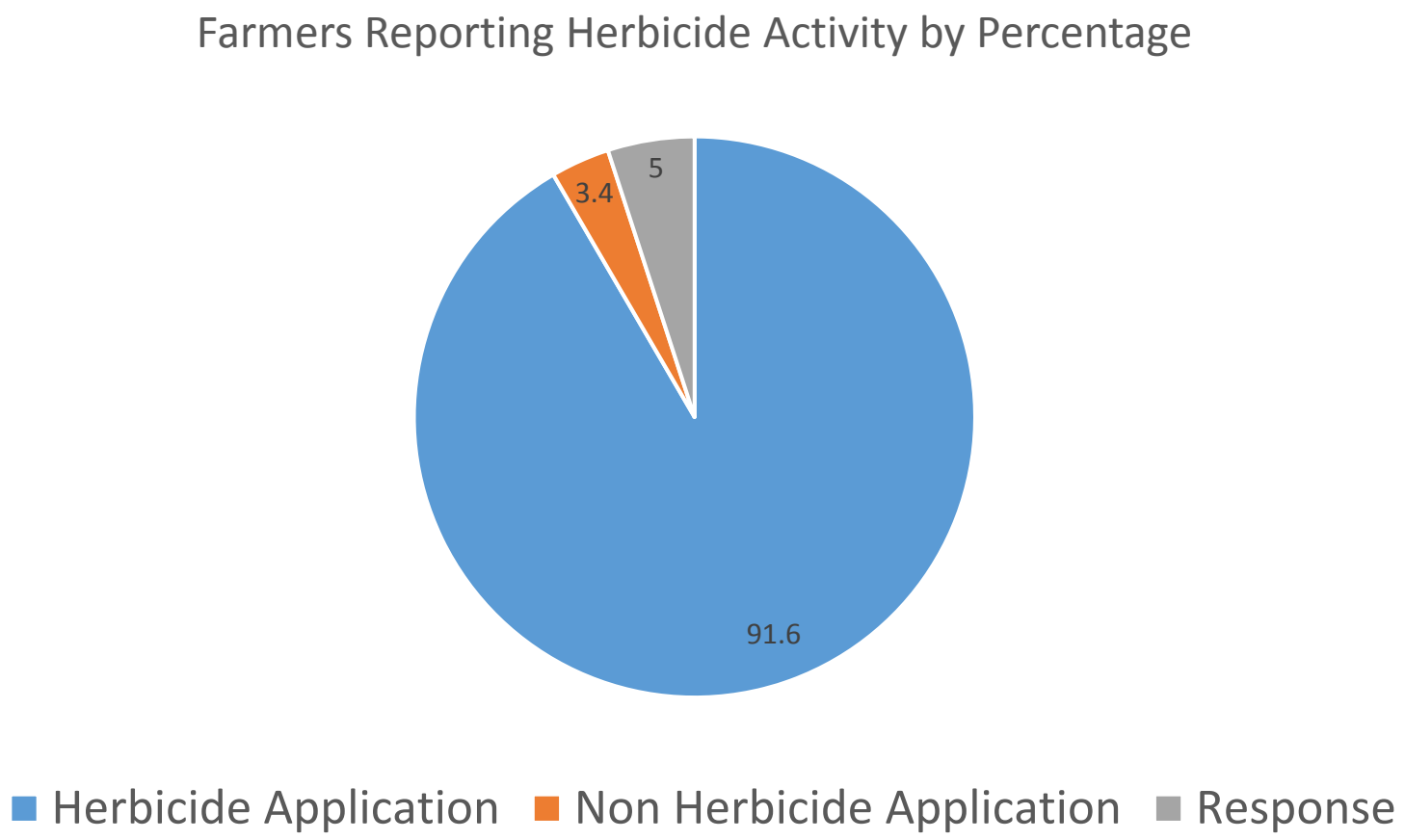
Distribution of Farmers Surveyed by Farm Size (2015-16) (226 farmers reporting acreage out of 238)



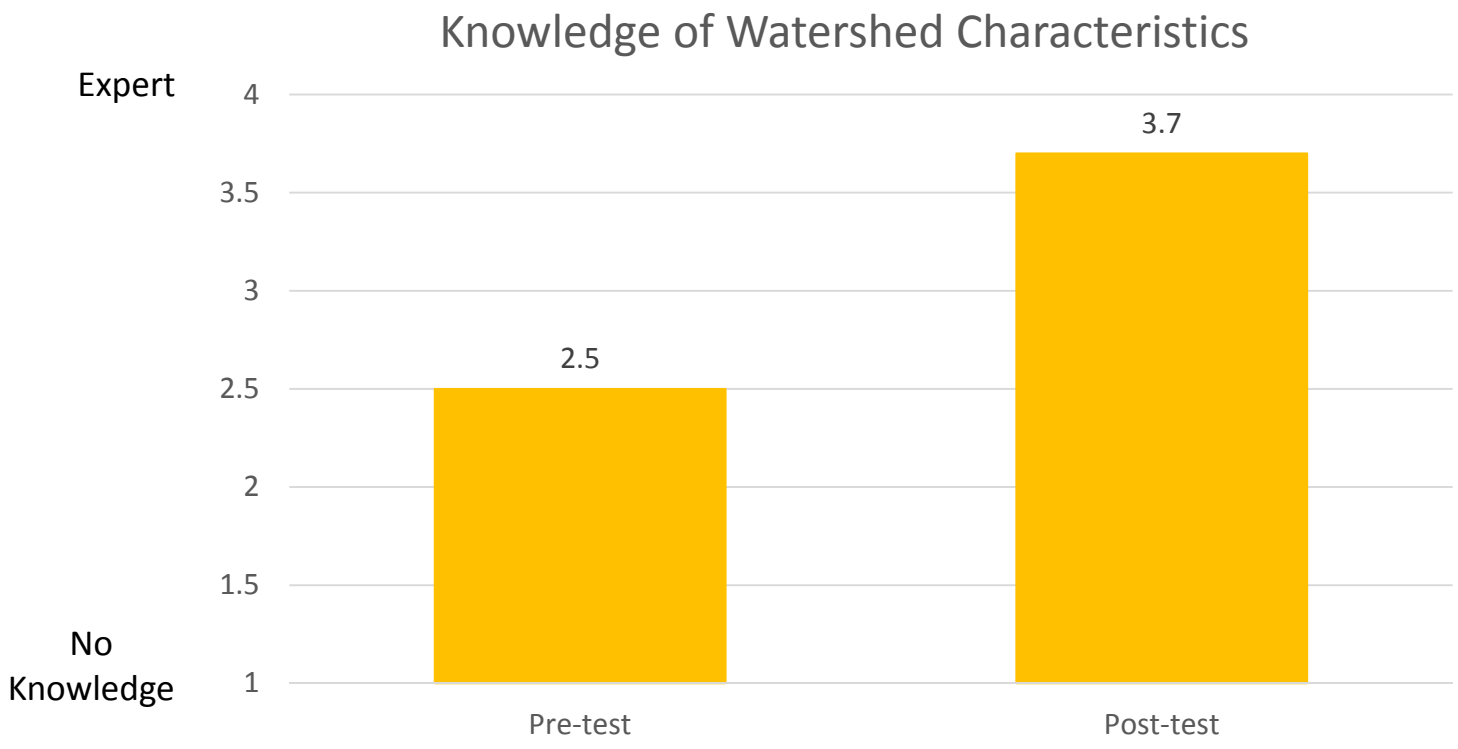
Land farmed by Reporting Producers 2015-16



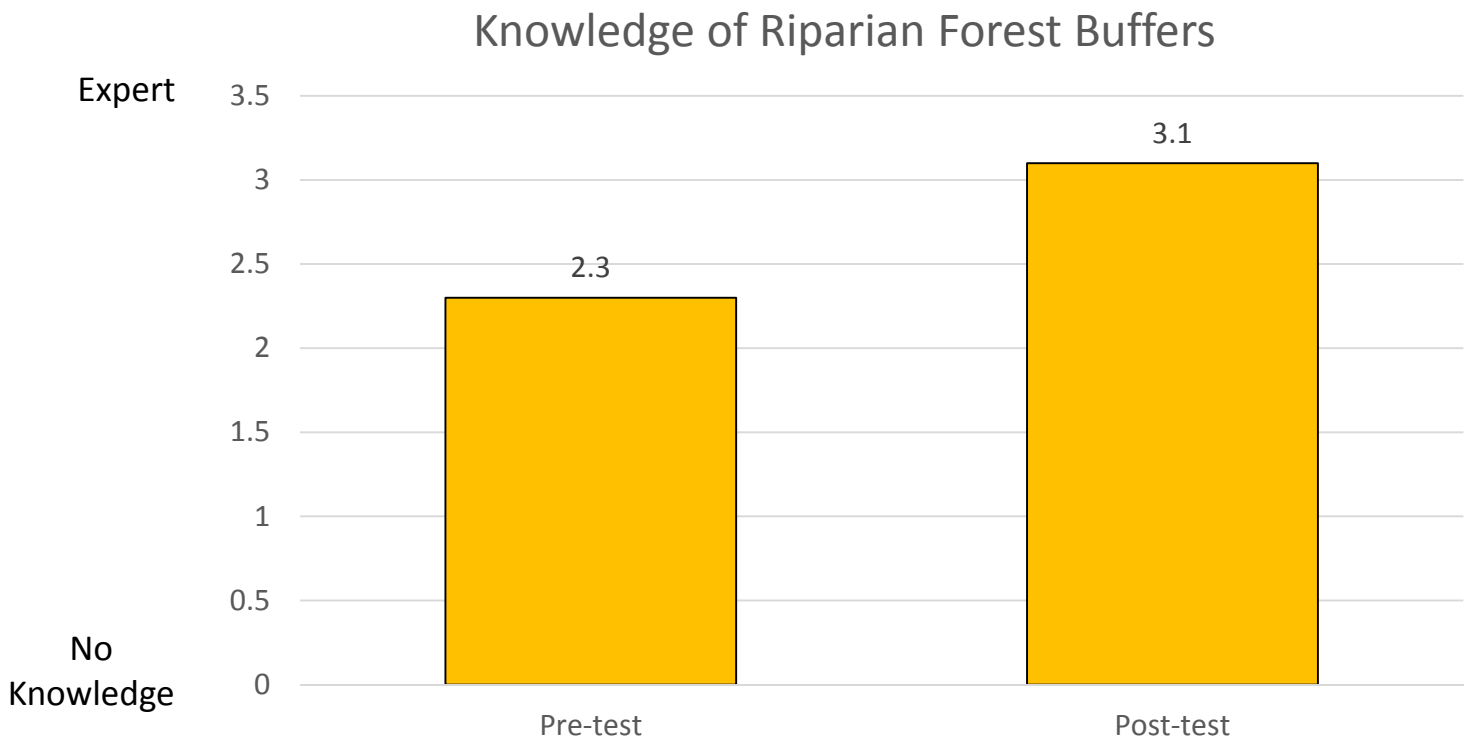
Percentage Farmers Reporting Herbicide Application (2015-16) (238 farmers Surveyed)



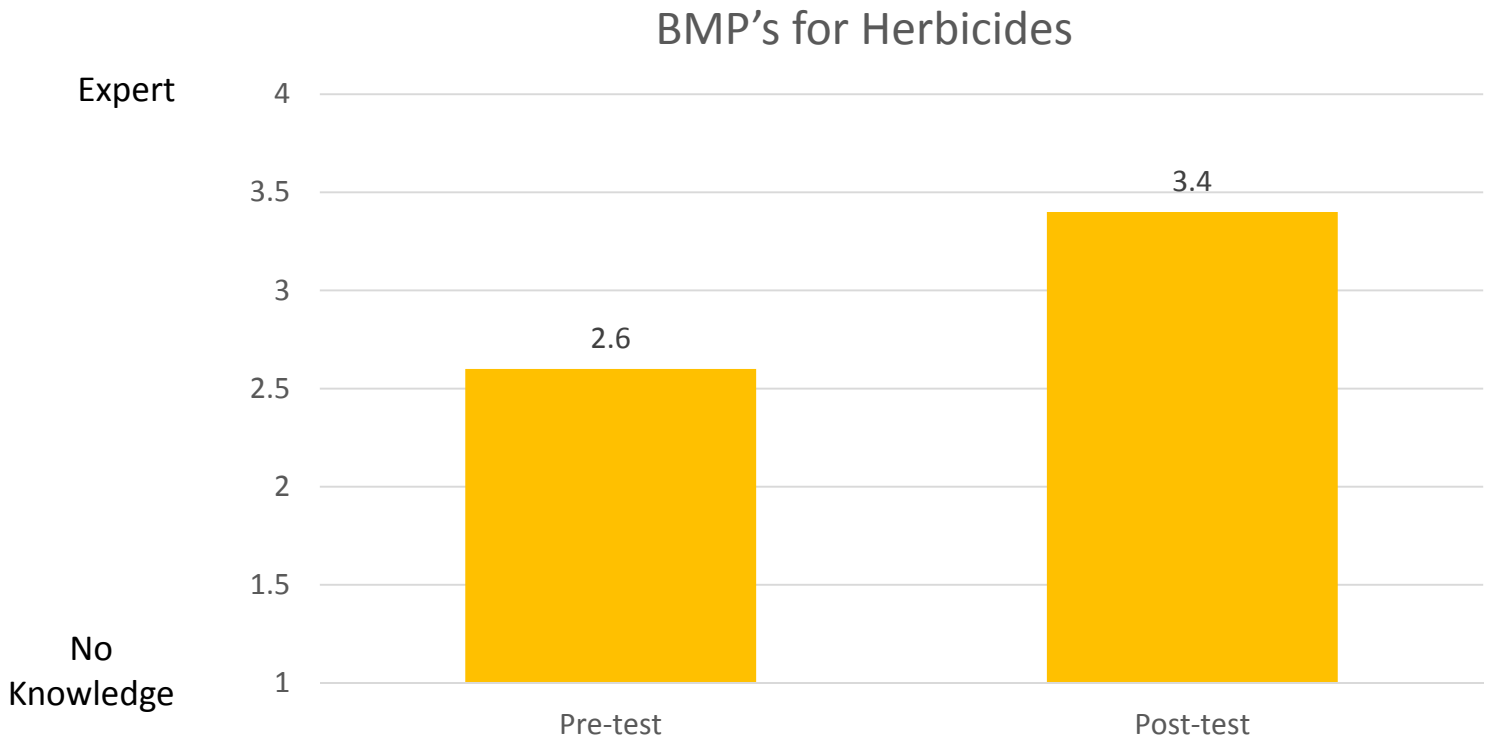
Knowledge about… Watershed characteristics that may make label recommendation inadequate for protecting water quality



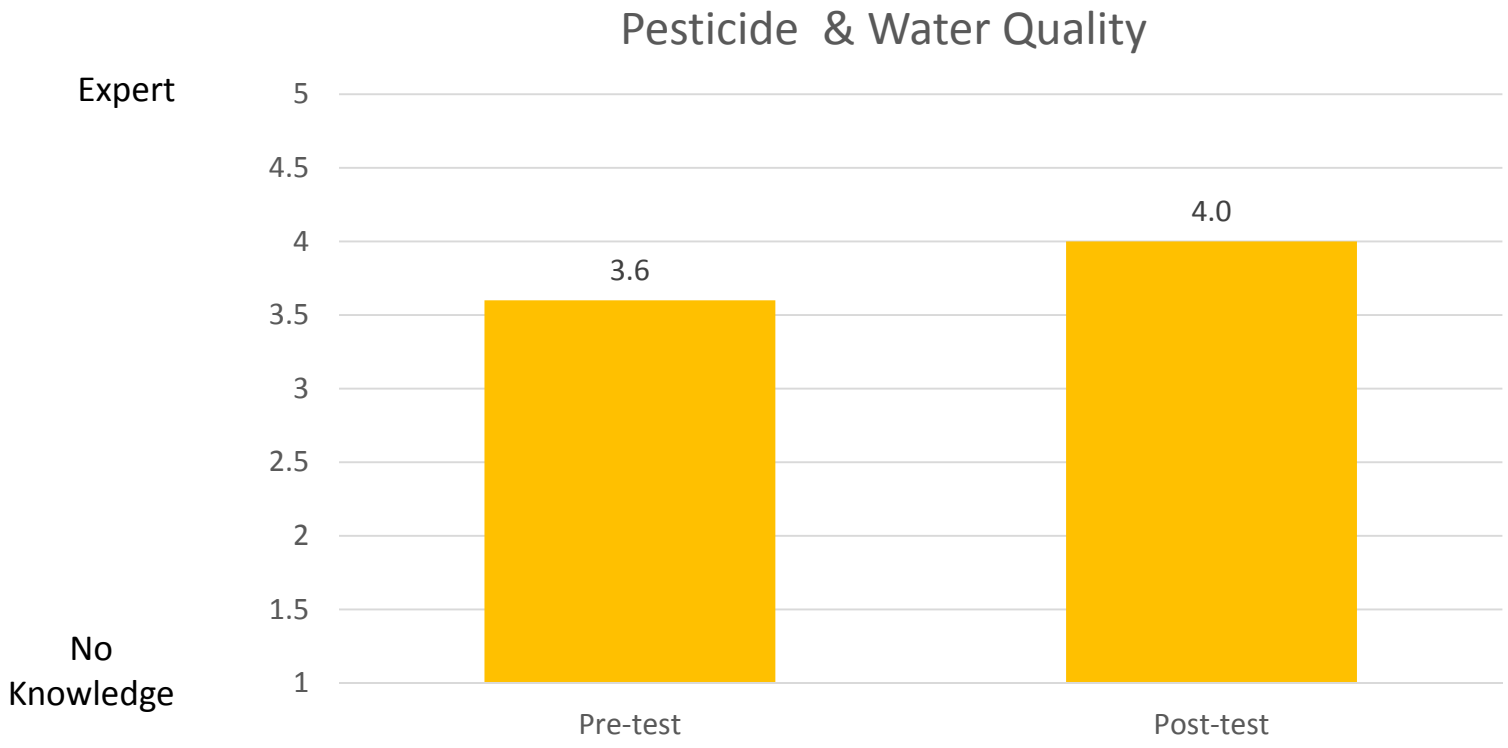
Knowledge about… Riparian Forest Buffers



Knowledge about…Properties of herbicides for protecting water quality.

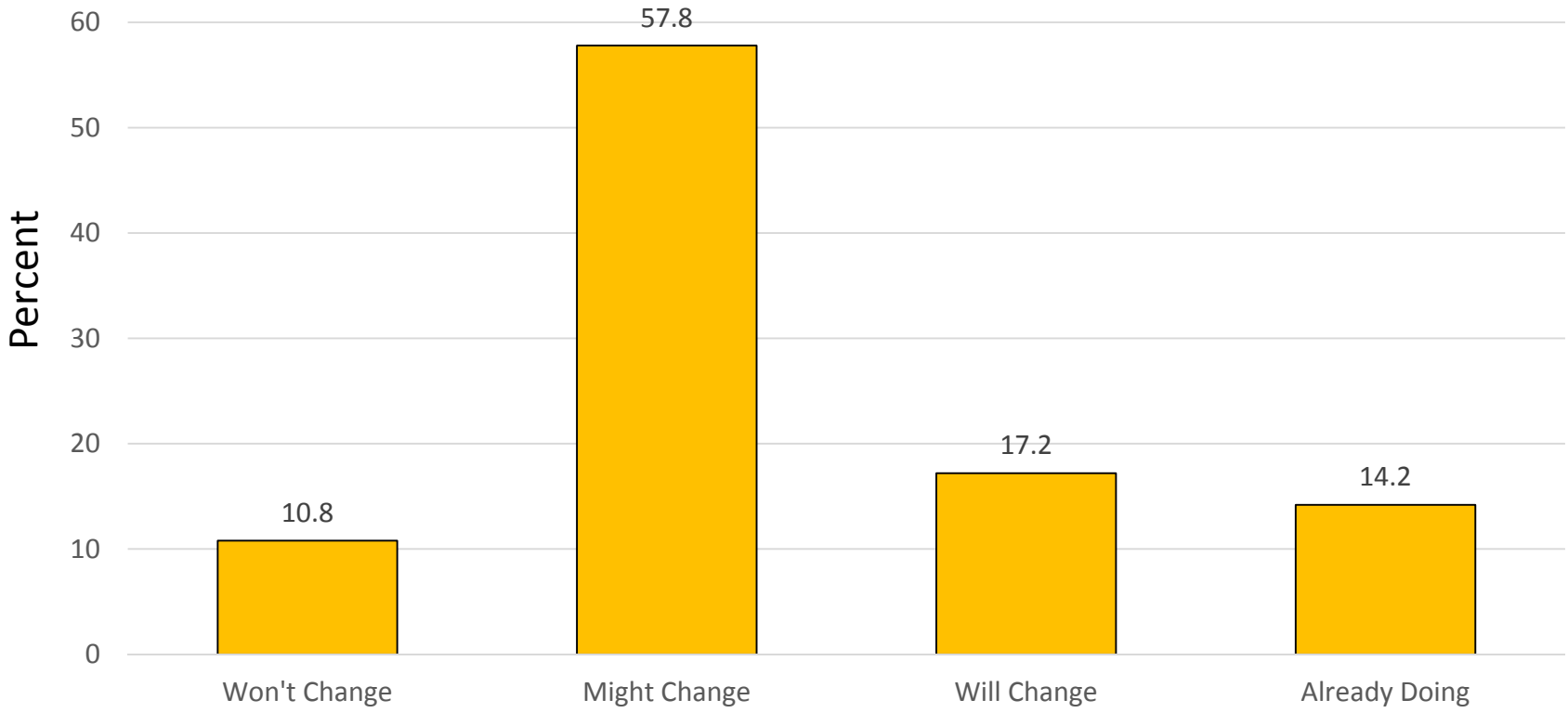


Knowledge about… Importance to keep pesticides out of streams and lakes.



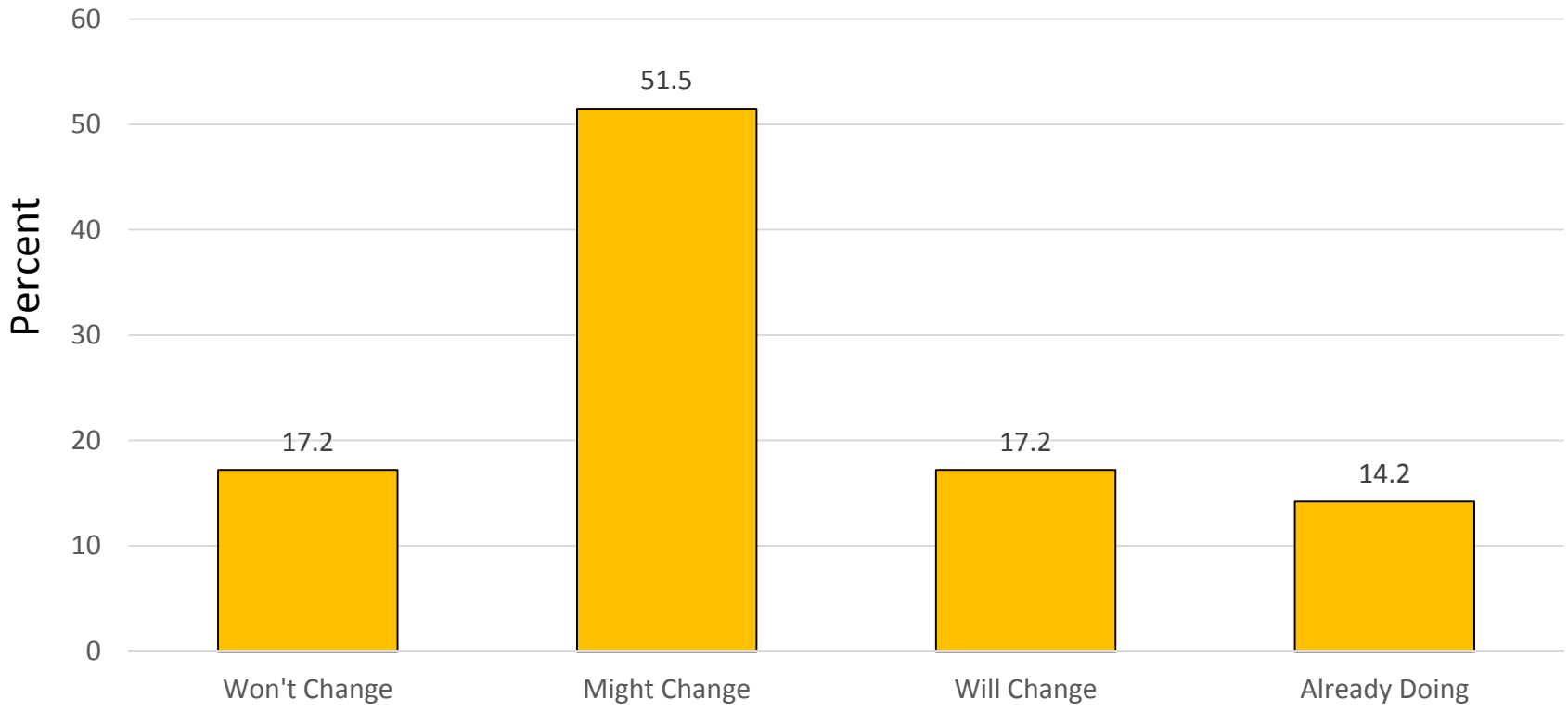
Farmers Reporting Intent to Increase Pesticide Runoff BMPs within the Next 12 Months (2015-16)

(204 responding out of 238 Surveyed)



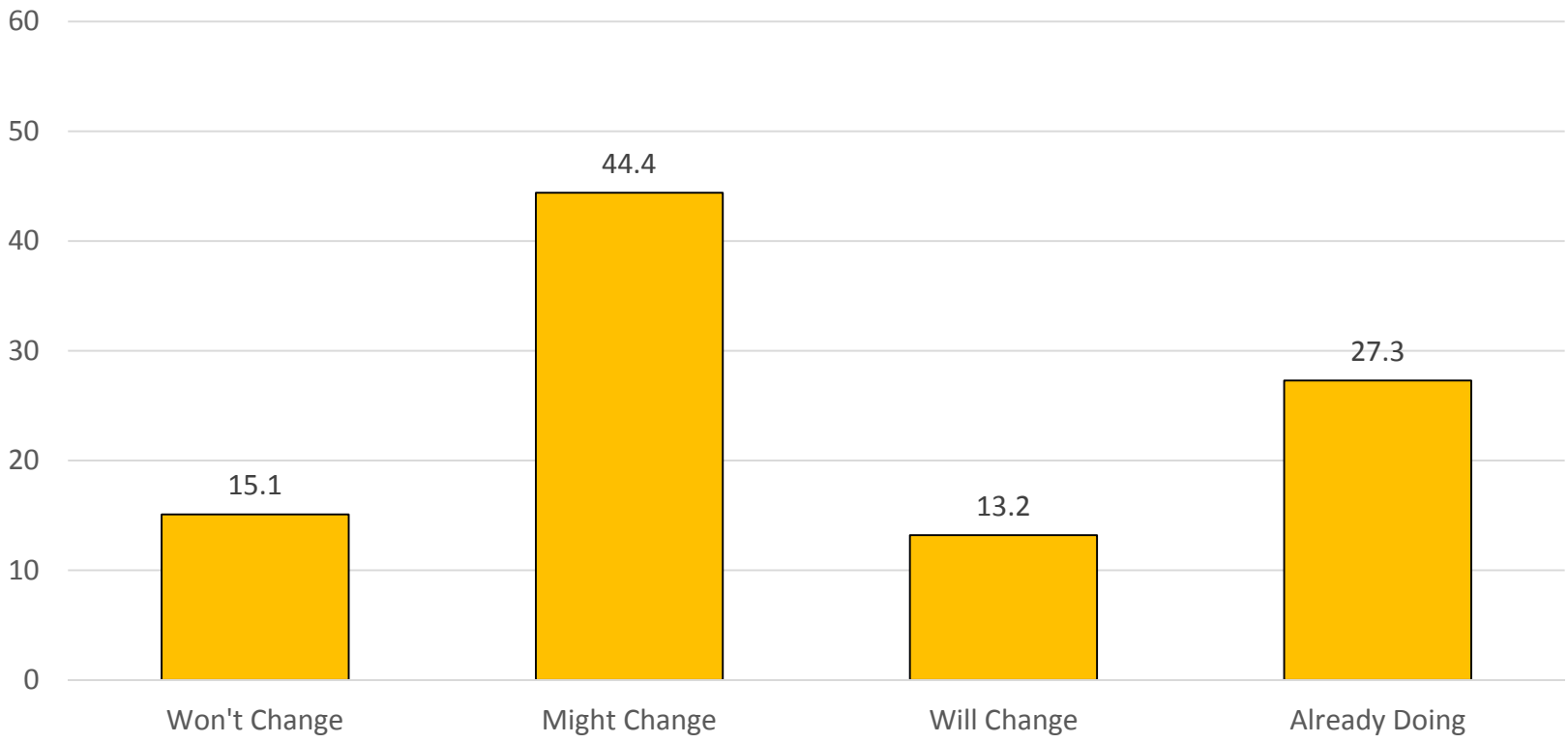
Farmers Reporting Intent to Consider Pesticide Alternatives to Atrazine within the Next 12 Months (2015-16)

(204 responding out of 238 Surveyed)



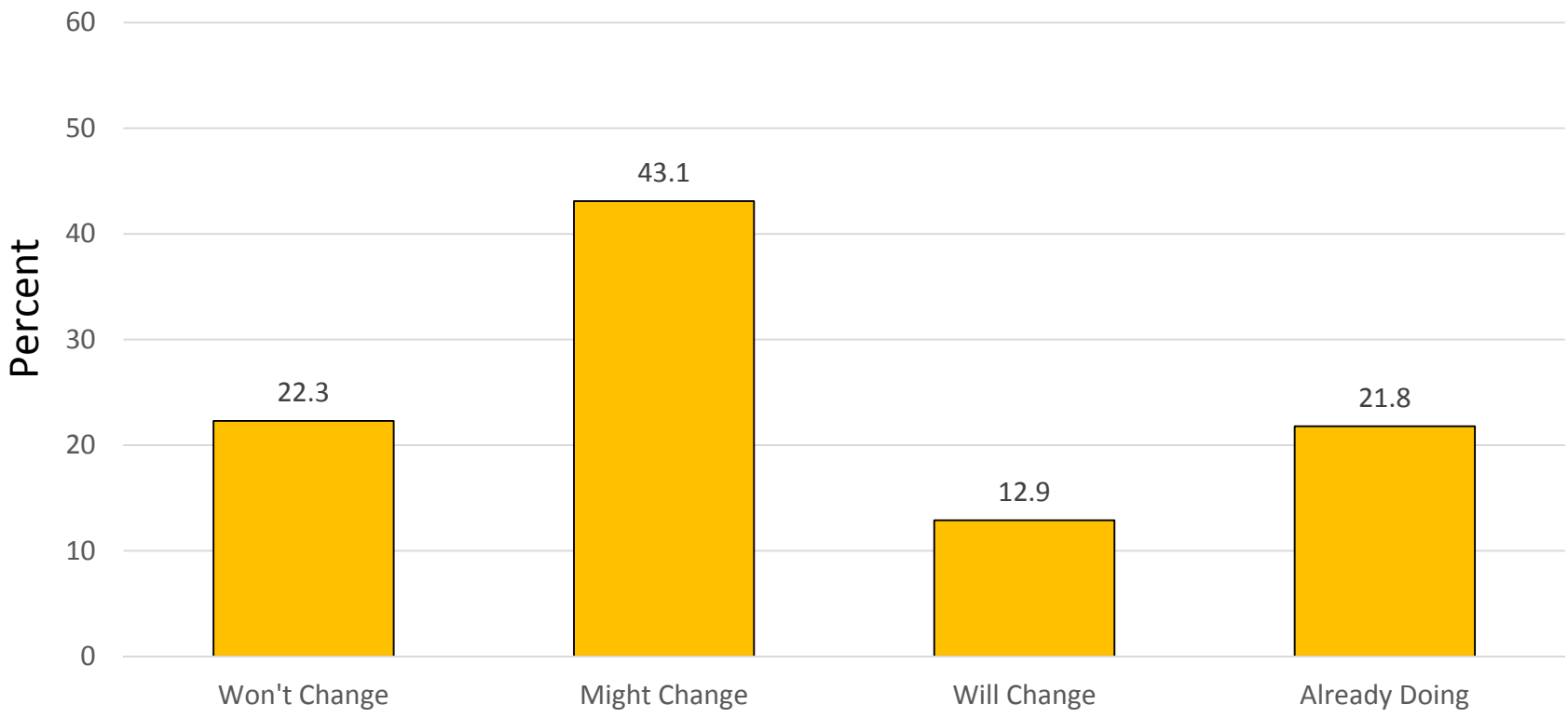
Farmers Reporting Intent to Use Field Borders/Filter Strips to Control Runoff in the Next 12 Months (2015-16)

(205 responding out of 238 Surveyed)



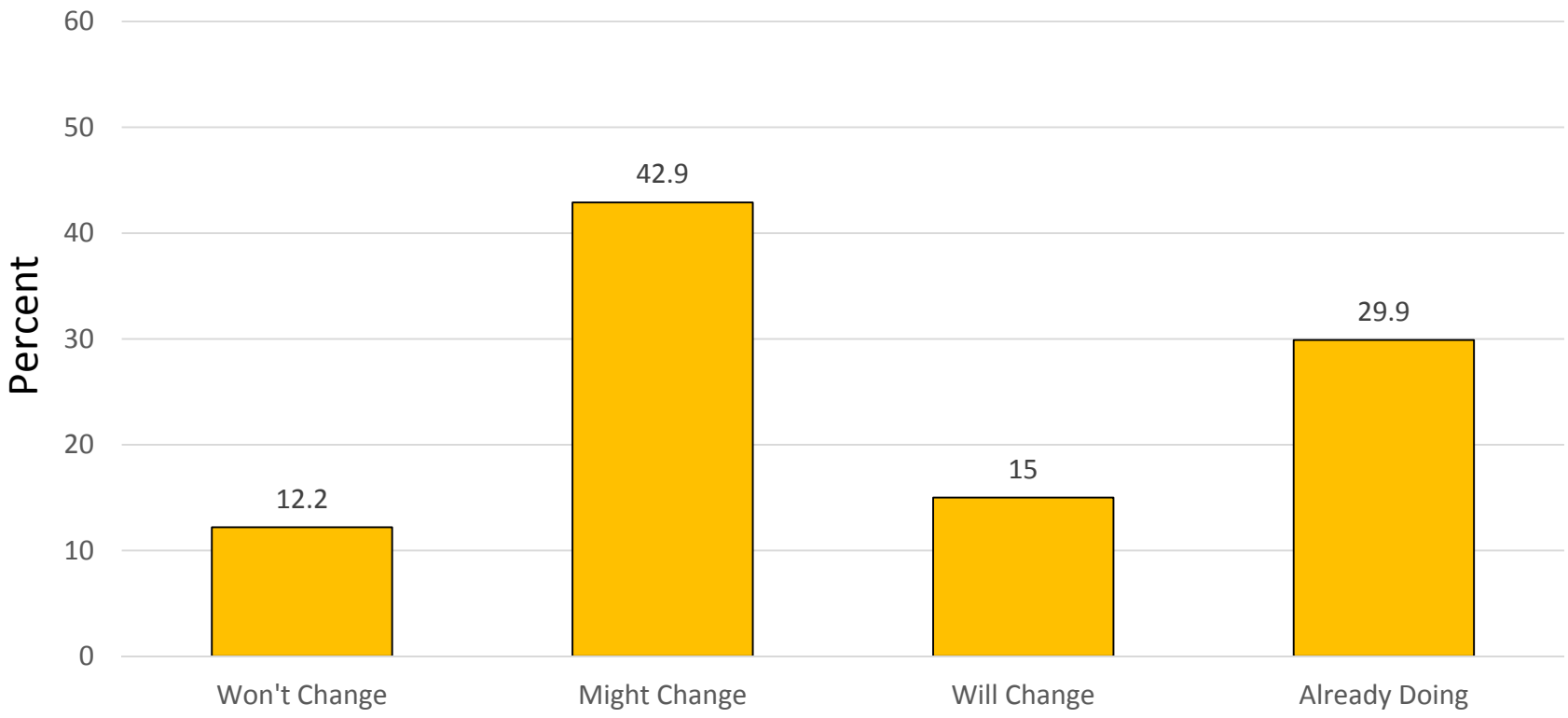
Farmers Reporting Intent to Install Riparian Areas in the Next 12 Months (2015-16)

(202 responding out of 238 Surveyed)



Farmers Reporting Intent to Plant Cover Crops in the Next 12 Months (2015-16)

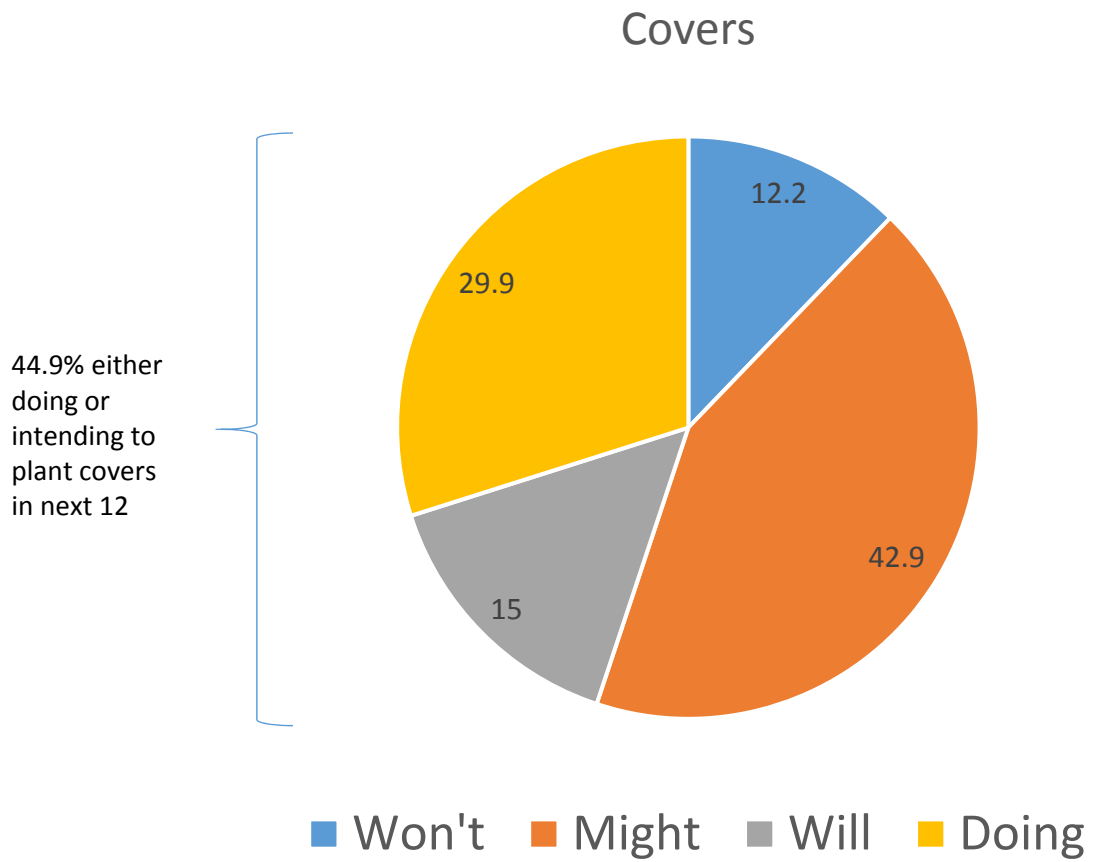
(147 responding out of 192 Surveyed in 2016) *



*Only 2016 survey data used, as cover crop question introduced to survey in 2016 (192 farmers surveyed)

Farmers Reporting Intent to Plant Cover Crops in the Next 12 Months (2015-16)

(147 responding out of 192 Surveyed in 2016)*



*Only 2016 survey data used, as cover crop question introduced to survey in 2016 (192 farmers surveyed)

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Rich Hoorman, Horticulture Specialist, 636-970-3000