Implementation of BMPs in the Little Arkansas River Watershed

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Little Arkansas River Watershed

- Agricultural watershed
  - 78% cropland
  - 19% grazingland
- TMDLs set for the watershed
  - 52% of stream segments required TMDLs
- Water quality concerns include bacteria, nutrients, sediments, pesticides
- Drinking water source for city of Wichita and numerous smaller cities and towns
- Source for aquifer recharge

Watershed Restoration and Protection Strategy
For The
Little Arkansas River Watershed

October 2004

Stakeholders Committee

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Frank Harper
Richard Larson
Dwight Lohrenz
Mike McGinn
Don Schroeder
Joe Swanson
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Agency Advisors

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•*Little Arkansas Watershed WRAPS Implementation Goals*

- Reduce atrazine herbicide in water to reach goal of 3 µg/L, with no seasonal spikes.
- Reduce fecal coliform bacteria in water to < 200 cfu/100 ml water for swimming and < 2,000 cfu/100 ml water for wading (boating and fishing).
- Reduce nutrients and sediments to achieve goal of DO > 5mg/L, BOD < 3.5 mg/L, TDS < 808 mg/L and TSS < 101 mg/L in lake waters.

•*Project Funding*

- USDA CSREES 406 Project, “Measuring Success of a TMDL Implementation Plan: Land, Stream, and Economic Responses to Targeted Stakeholder Actions”
- EPA 319 Project, “Little Arkansas River Watershed Restoration and Protection Strategies”
- City of Wichita
- Kansas State Conservation Commission
- Landowner Contributions

•Project Overview

- Stream geomorphologic assessment on targeted streams to assess stream condition and sediment sources.
- Watershed modeling is being used to estimate the extent of target-BMP implementation to achieve measurable changes in water quality.
- Economic analysis is being conducted to determine the impact on net return per acre associated with potential improvements in water quality.

•Project Overview

- Automated and grab sample water quality monitoring system established throughout watershed.
- Biomonitoring on targeted streams.
- Education and information.
- BMP implementation.

•BMP Implementation

- Focused on reducing atrazine herbicide runoff from corn (2007, 2008) and grain sorghum (2006, 2007, 2008) fields.
- Targeted three (2006), five (2007), and six (2008) watersheds for rapid implementation of atrazine herbicide BMPs.
- Installed automated water quality monitoring stations at the base of the six targeted watersheds and two adjoining watersheds – “paired watersheds.”

•*Elements of BMP Implementation*

- Developed and delivered educational meetings to farmers and pesticide dealers.
- Research/demonstrations of BMPs on farmer fields
- Incentive payments for atrazine BMP adoption.
- Met one-on-one with farmers in targeted watersheds.
- Evaluated progress.

•BMP Incentive Program

- Incentive $ program developed for atrazine BMPs - $20,000 (2006), $40,000 (2007), and $50,000 (2008).
- Hired an Extension agronomist to meet one-on-one with farmers in the targeted watersheds. Our goal was to have 50 (2006), 70 (2007),and 100 (2008) farmers adopt BMPs.
- Farmers signed up for program in the field. Payments based on level of protection.

Form Used Calculate Incentive Payment - 2006

Atrazine BMPs Utilized (Check all that apply)	Reduction in Runoff Factor
Incorporate atrazine into the first 2 inches of soil prior to planting	.70
Apply atrazine in the fall or prior to April 15	.50
Apply atrazine as part of a postemergence premix	.60
Reduce soil-applied atrazine rates to 1 lb ai/acre or less	.33
Use split applications of atrazine, e.g. 2/3 prior to April 15 and 1/3 at planting	.25
Band apply atrazine at planting	.50
Use no atrazine	1.00

TOTAL ATRAZINE BMP RUNOFF EFFECTIVENESS (TABRE) _____
Add Reduction in Runoff Figure

Incentive Payment Per Acre $6.00 X TABRE $_____
(Maximum payment per acre $6.00)

TOTAL FIELD PAYMENT
_____ Acres X $_____Incentive Payment Per Acre = $_____

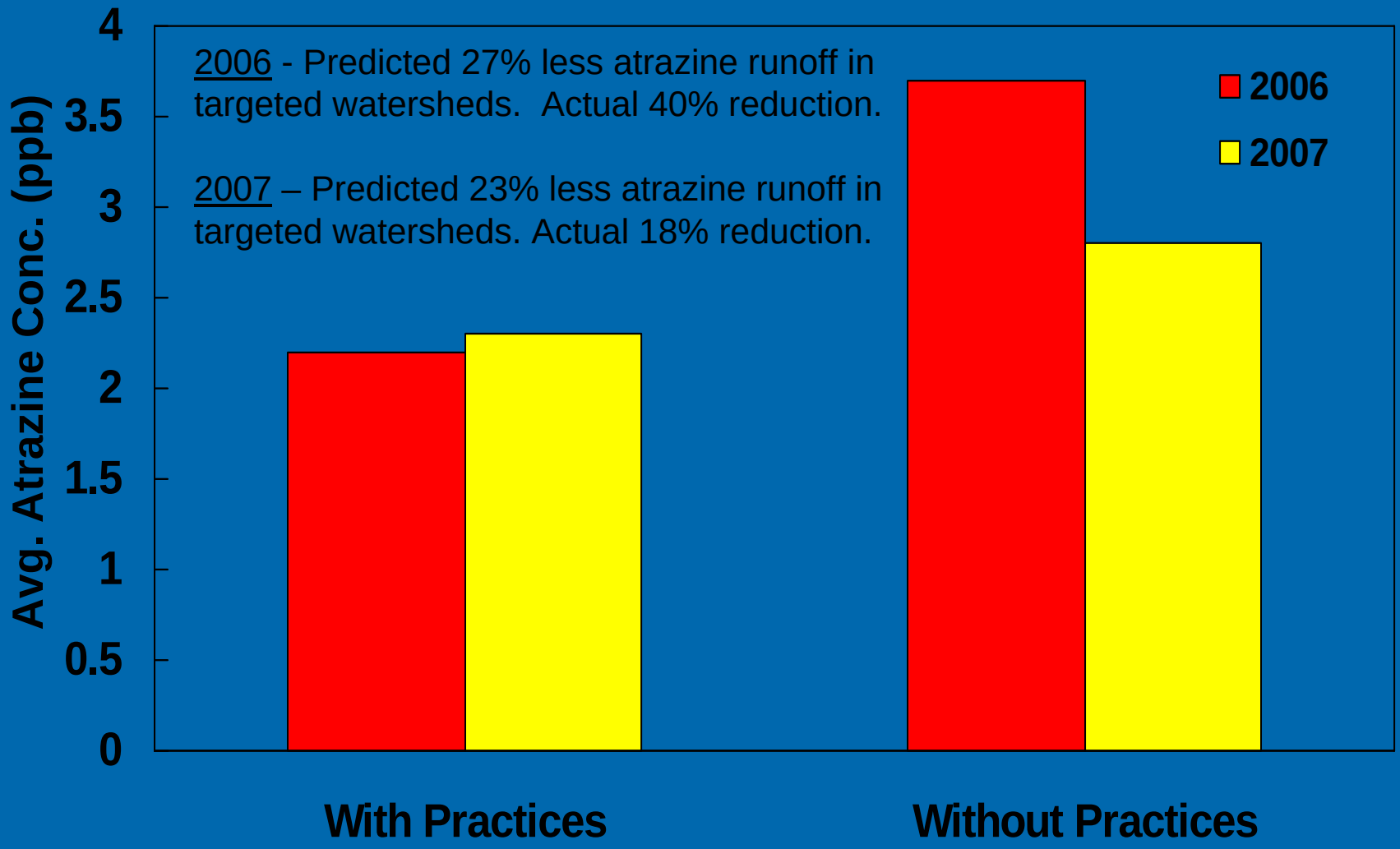
•BMP Implementation Results

- Visited one-on-one with 50 (2006), 77 (2007), and 100 (2008) farmers.
- 41 (2006), 74 (2007), and 95 (2008) farmers committed to implementing atrazine BMPs.
- (2006) 4,792 acres of grain sorghum had BMPs implemented.
  - Dry Turkey Creek — 44% of grain sorghum acres
  - West Upper Emma Creek — 33% of grain sorghum acres
  - Black Kettle Creek — 33% of grain sorghum acres

•BMP Implementation Results

- (2007) 10,512 acres of corn and grain sorghum had BMPs implemented.
  - Dry Turkey Creek 34% of corn and grain sorghum acres
  - West Upper Emma Creek 61% of corn and grain sorghum acres
  - Black Kettle Creek 37% of corn and grain sorghum acres
  - Blaze Fork Creek 41% of corn and grain sorghum acres
  - Sand Creek 32% of corn and grain sorghum acres.
- (2008) 13,044 acres of corn and grain sorghum had BMPs implemented.

Atrazine Concentrations in Watersheds with and without BMP Implementation



•*Summary*

- A watershed plan was developed for the watershed.
- Watersheds were targeted for rapid implementation of pesticide BMPs.
- Research/demonstration BMP sites were established on farmer fields.
- An education program taught BMPs to farmers and consultants.
- An incentive program was developed and funded.

•*Summary*

- An extension agronomist met one-on-one with farmers.
- Farmers implemented BMPs on the targeted acres.
- Monitoring of paired watersheds found reductions in atrazine runoff.