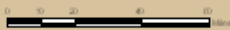
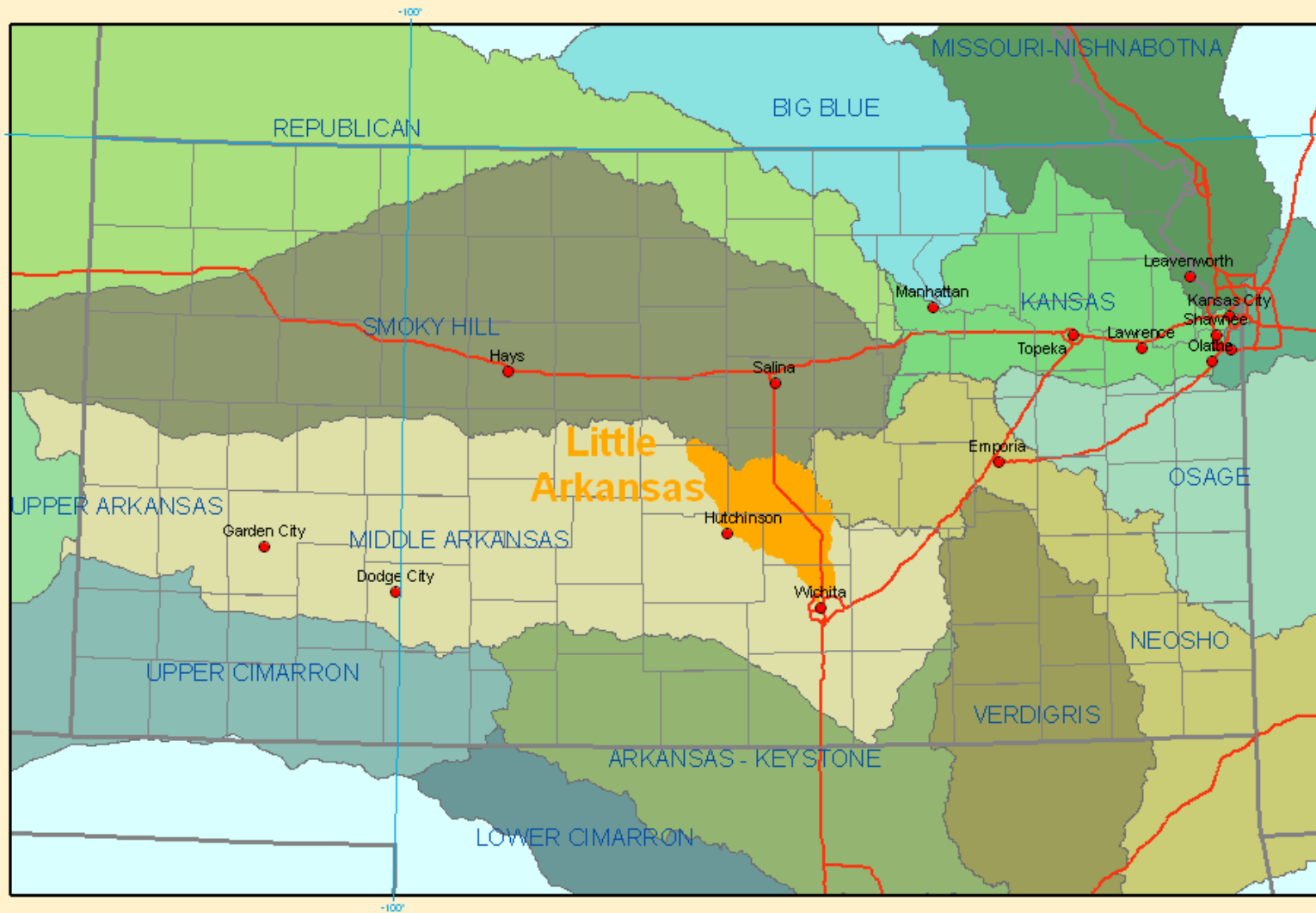


BMP Implementation in the Little Arkansas River Watershed

Ron Graber
K-State Research & Extension

Wichita Visioneering Alliance Summit
November 18, 2010



Little Arkansas River Watershed

Watershed Specialist Ron Gabel
Map by Kansas State University

Sources: ESRI, U.S. EPA and KDHE



Little Arkansas River Watershed

- Agricultural watershed
 - 78% cropland
 - 19% grazingland
 - 237 registered CAFO's
- 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
 - 205 public water supplies
 - 7400 groundwater wells
- Source for aquifer recharge

Resource Concerns/Issues by Land Use

SWAPA+H Concerns	Specific Resource Concern/Issue	Pasture/Hay	Grain Crops	Row Crops	Grazed Range	Forest	Wildlife	Urban
Soil Erosion	Sheet and Rill		X	X				
	Wind		X	X				
	Ephemeral Gully		X	X				
	Classic Gully		X	X	X			
	Streambank			X				
	Road, Roadsides and Construction Sites							X
Soil Condition	Organic Matter Depletion		X	X				
	Rangeland Site Stability				X			
	Compaction		X	X				
	Contaminants: Animal Waste and Other Organics - P		X	X				
	Contaminants: Commercial Fertilizer - P		X	X				
	Damage from Sediment Deposition*		X	X				
Water Quantity	Excessive Runoff, Flooding, or Ponding*	X	X	X	X			X
	Inefficient Water Use on Irrigated Land			X				
	Reduced Capacity of Conveyances by Sediment Deposition*		X	X				
	Reduced Storage of Water Bodies by Sediment Accumulation				X			
Water Quality, Groundwater	Excessive Nutrients and Organics		X	X				
Water Quality, Surface	Harmful Levels of Pesticides							X
	Excessive Nutrients and Organics		X	X				X
	Excessive Suspended Sediment and Turbidity		X	X				
	Harmful Levels of Pathogens*							X
Air Quality	Chemical Drift*		X	X				
	Reduced Visibility		X	X				
Plant Condition	Noxious and Invasive Plants				X			
	Forage Quality and Palatability	X			X			
	Wildfire Hazard*				X			
Animal: Fish and Wildlife	Inadequate Cover/Shelter		X					
	Habitat Fragmentation							X
Animal: Domestic	Inadequate Quantities and Quality of Feed and Forage				X			
	Inadequate Stock Water				X			
Human, Economics	High Risk & Uncertainty		X	X				
	High Capital/Financial Costs		X	X				
	High Labor Costs or Availability		X	X				
	High Management Level Required		X	X				

DECEMBER 2007

6.1 Reported Conservation Progress (Fiscal Years (FY) 2002–2007)

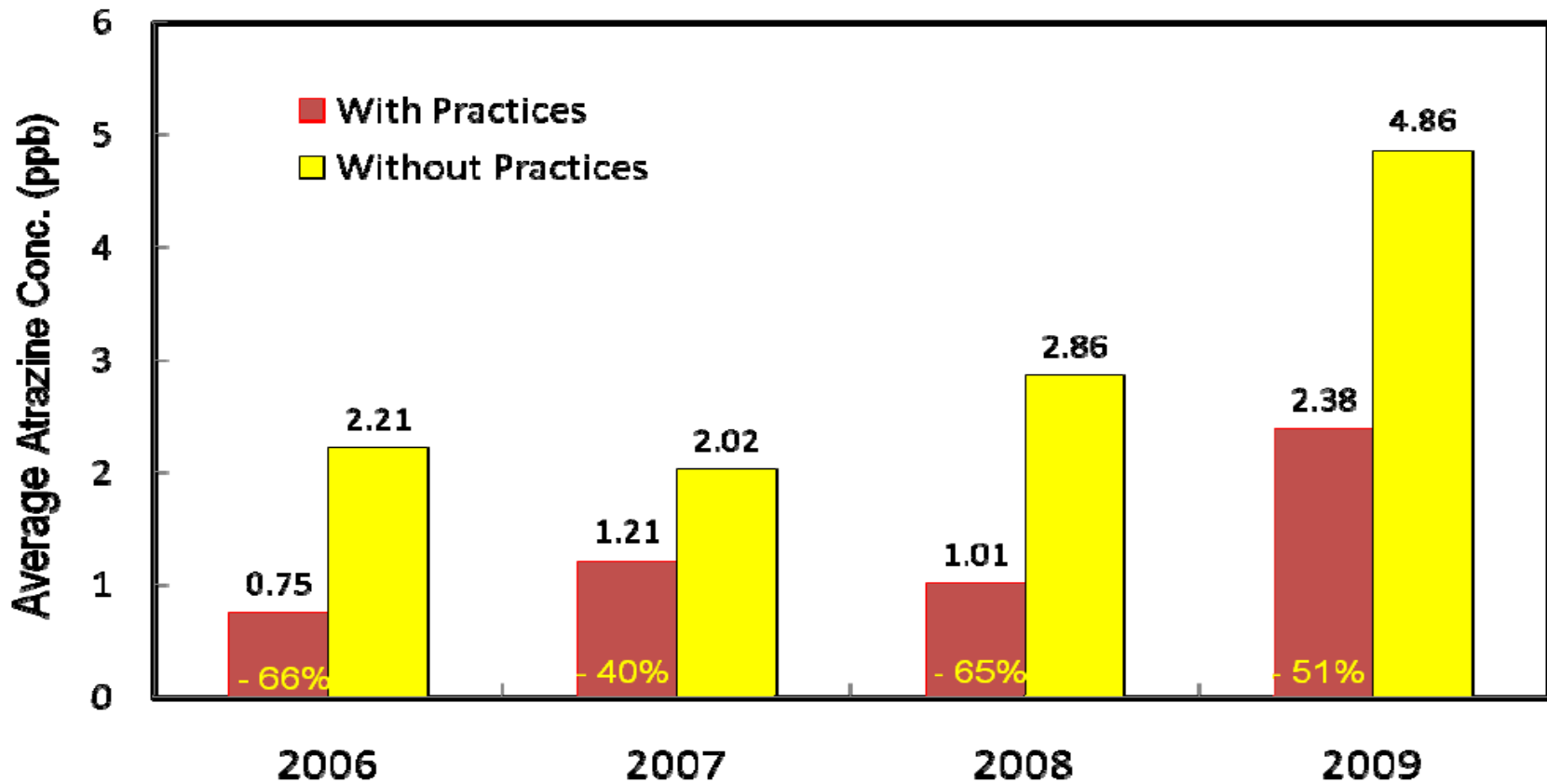
PRS Data	FY02	FY03	FY04	FY05	FY06	FY07	Avg/ Year	Total
Conservation Systems Planned (ac)	13,581	14,956	N/A	13,570	19,618	11,171	14,579	72,896
Conservation Systems Applied (ac)	7,818	8,587	N/A	9,082	13,239	4,854	8,716	43,580
Conservation Treatment (Units/Acres)								
Brush Management (ac)			336	28	197	65	157	626
Conservation Crop Rotation (ac)			6,614	3,808	7,204	6,296	5981	23922
Contour Buffer Strips (ac)	12	1		8			7	21
Contour Farming (ac)			1,190	1,453	1,302	1,118	1266	5063
Cover Crop (ac)			737	505	221	75	385	1538
Critical Area Planting (ac)			58	54	99	16	57	227
Diversion (ft)					238	822	530	1060
Fence (ft)			5,288	5,650	9,049	1,709	5424	21696
Field Border (ft)	1		3,650		42,235	12,540	14607	58426
Filter Strip (ac)	197	154	34	28	31	10	76	454
Forage Harvest Management (ac)			19	54	601	133	202	807
Grade Stabilization Structure (no)			2		13	1	5	16
Grassed Waterway (ac)	51	16	72	62	239	21	77	461
Heavy Use Area Protection (ac)				21	1		11	22
Irrigation System, Micro-irrigation (ac)			20 (no.)	147	661	74	294	882
Irrigation System, Sprinkler (ac)			3 (no.)	52			52	52
Irrigation Water Management (ac)	2,061	1,475		428	349	403	943	4716
Mulching (ac)						4	4	4
Nutrient Management (ac)	2,857	1,615	2,527	2,120	943	237	1717	10299
Pasture and Hay Planting (ac)			83	45	84		71	212
Pest Management (ac)	2,939	1,287	3,555	1,323	1,944	683	1955	11731
Pond (no)					3	2	3	5
Prescribed Burning (ac)			356	271		319	315	946
Prescribed Grazing (ac)	1,137	367	594	1,681	1,101	779	943	5659
Range Planting (ac)			218	50	6	47	80	321
Residue Mgt, Mulch Till (ac)	3,444	456	55	1,129	505		1118	5589
Residue Mgt, No-Till/Strip Till (ac)	158	4,595	3,495	586	1,030	574	1740	10438
Residue Mgt, Seasonal (ac)			4,148	1,567	2,047	1,768	2383	9530
Restoration and Management of Declining Habitats (ac)			716	703	224	119	441	1762
Shallow Water Management for Wildlife (ac)			4	16	93		38	113
Terrace (ft)			52,550	72,197	59,292	30,400	53610	214439
Tree/Shrub Establishment (ac)	6	11	37				18	54
Upland Wildlife Habitat Management (ac)	1,209	1,387	2,650	1,195	4,415	788	1941	11644
Use Exclusion (ac)			2,165	343	732	501	935	3741
Waste Storage Facility (no)	1	1	2	1			1	5
Waste Treatment Lagoon (no)	1			1		1	1	3
Waste Utilization (ac)			213	373			293	586
Wastewater Treatment Strip (ac)				2		5	4	7
Watering Facility (no)				1	5	1	2	7
Wetland Enhancement (ac)	8	1		3	5		4	17
Wetland Restoration (ac)	21		4		93		39	118
Wetland Wildlife Habitat Management (ac)			21	3	43	8	19	75
Windbreak/Shelterbelt Establishment (ft)		6,207	9,695	1		1,934	4459	17837

Atrazine BMP's Implemented

<i>Best Management Practice</i>	<i>Percent of Total Atrazine BMPs</i>			
	(2006)	(2007)	(2008)	(2009)
Preplant incorporation	15	18	9	5
Early application	17	15	8	21
Postemergence application	3	8	9	5
Reduce soil-applied rates	10	43	52	42
Alternative crop	38	---	---	---
Combination of reduced rate and either early appl. or postemergence rate	18	3	9	7
No atrazine applied	.1	12	13	20

Total of - 305 growers - 51,388 acres

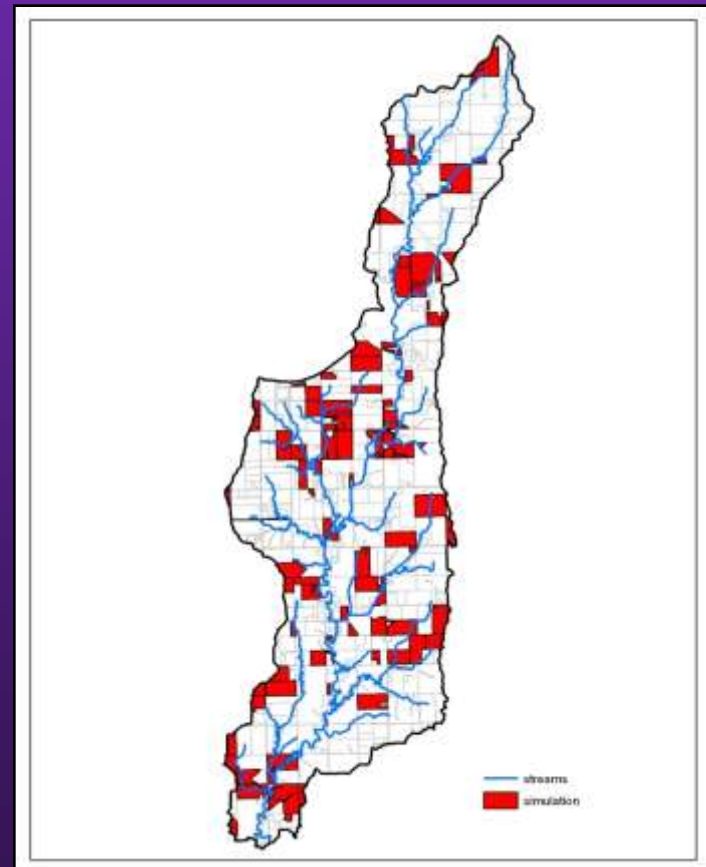
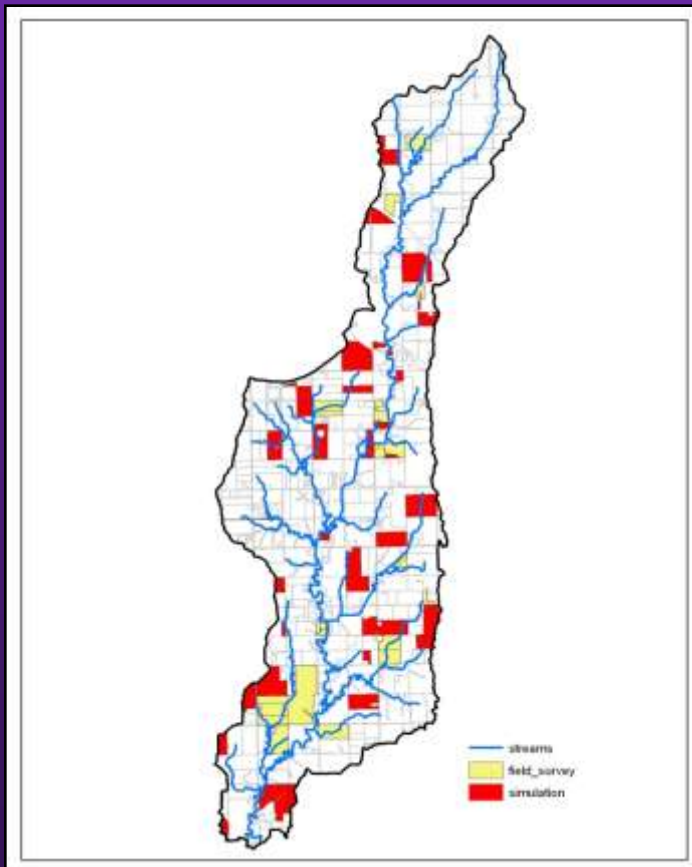
Atrazine Concentrations in Watersheds with and without BMP Implementation



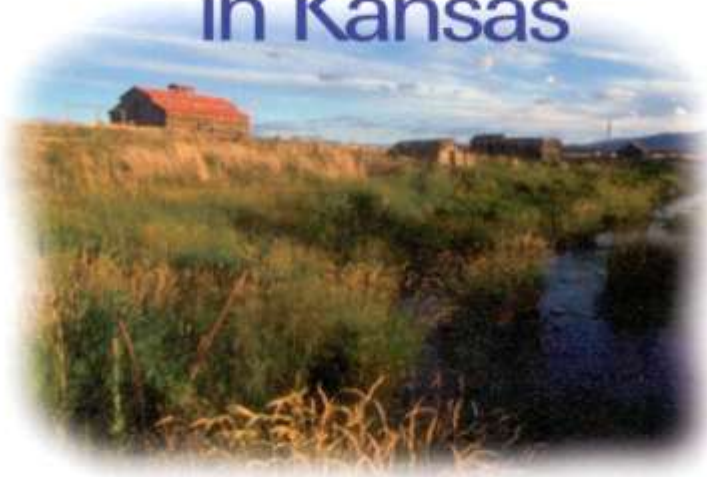
Sediment Project



Top 10% & 20% of fields contributing Sediment



Meeting Water Quality Challenges in Kansas



Taking Local Action

Questions

?

Ron Graber
Watershed Specialist
rgraber@ksu.edu