Why Managed Grazing?

Brian Pillsbury, Grazing Consultant

We'll Be Covering

What is Managed Grazing?

- What Are the Benefits of Managed Grazing?

Economics and Enhanced Quality of Life	Better Environment	Improved Animal Health and Nutrition

Quotes from the Naysayers:

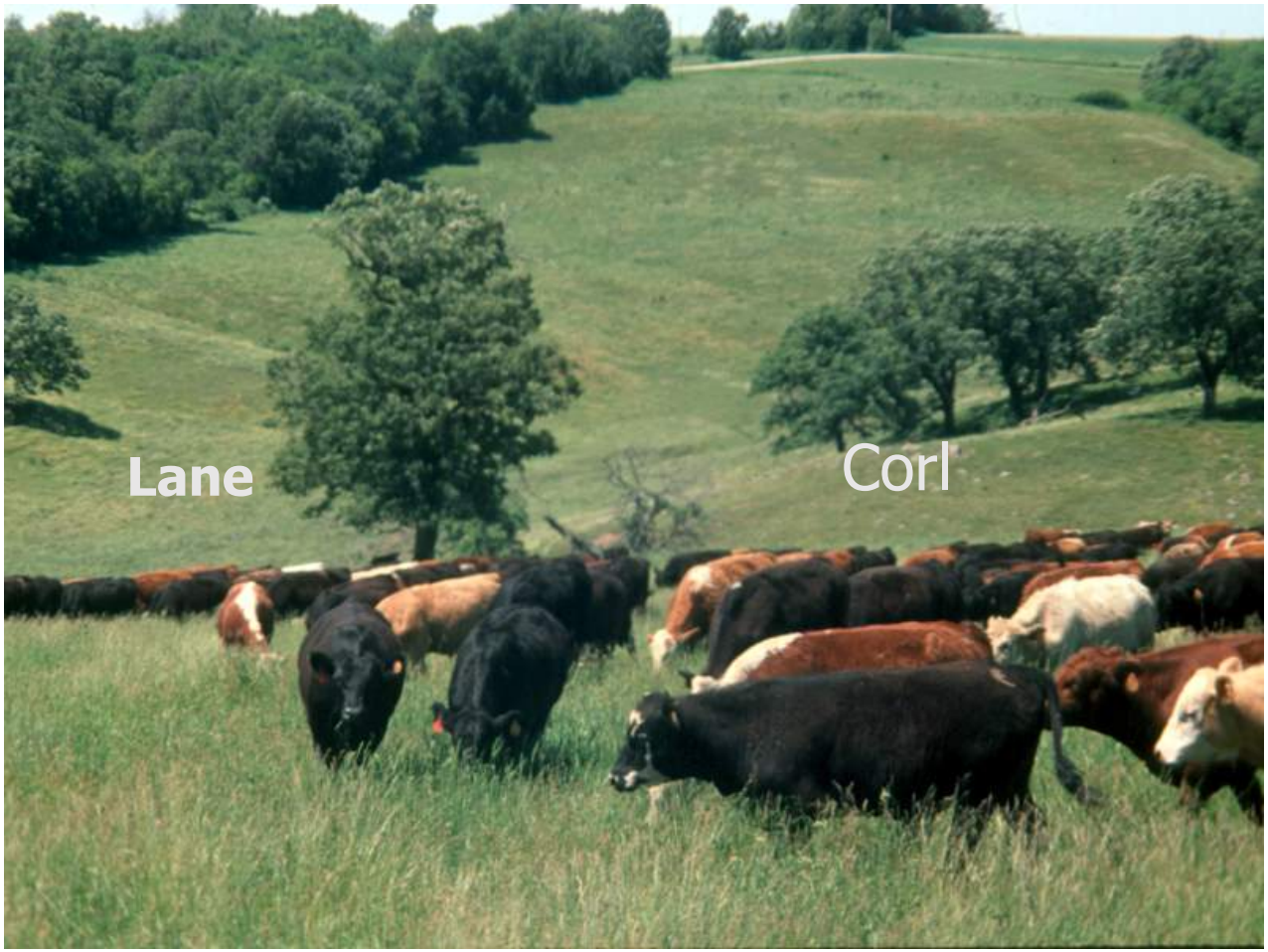
- **We tried rotational grazing years ago, but it was unproductive and didn't work.**
- **If I must graze my livestock to be certified organic, what is the minimum I must do?**
- **Why would I want to lower my animal production by grazing?**
- **We cannot bring animals on this farm, we have no facilities, besides we are crop farmers, and we don't have time for animals.**
- **This land is too valuable to convert it to pasture.**

What is Managed Grazing?

- Managed Grazing….

- **is a goal driven approach to grassland management and livestock production whereby the land and animals are managed for optimum production and environmental protection and meet the goals of the producer.**

Some Examples: Rotational Stocking



- Rest - rotation
- Pastures are divided into paddocks; some are grazed while the remainder “rests”. Occupancy periods range from 3 days – 1 week
- Allows forages to recover from grazing, rebuild energy reserves and plant vigor.

Management intensive Grazing

- Involves:
- Greater numbers of paddocks or sub-divisions within paddocks. Occupancy period ranges from .5 – 3 days.
- Increases the amount of rest and decreases days grazing each rotation.

Mob Stocking

- High Stock density grazing
- Incorporates residue and improves soil health. Occupancy ranges from 3 – 6 hours.
- Helps to revitalize old stands. Improves production of young stands and grows large roots systems.

What Grazing System is Best

- **Considerations:**
- **What expectations do you have for production?**
- **What is best for the soil and forage?**
- **What is best for the animals?**
- **The higher the management, the better the outcomes.**

What are The Benefits

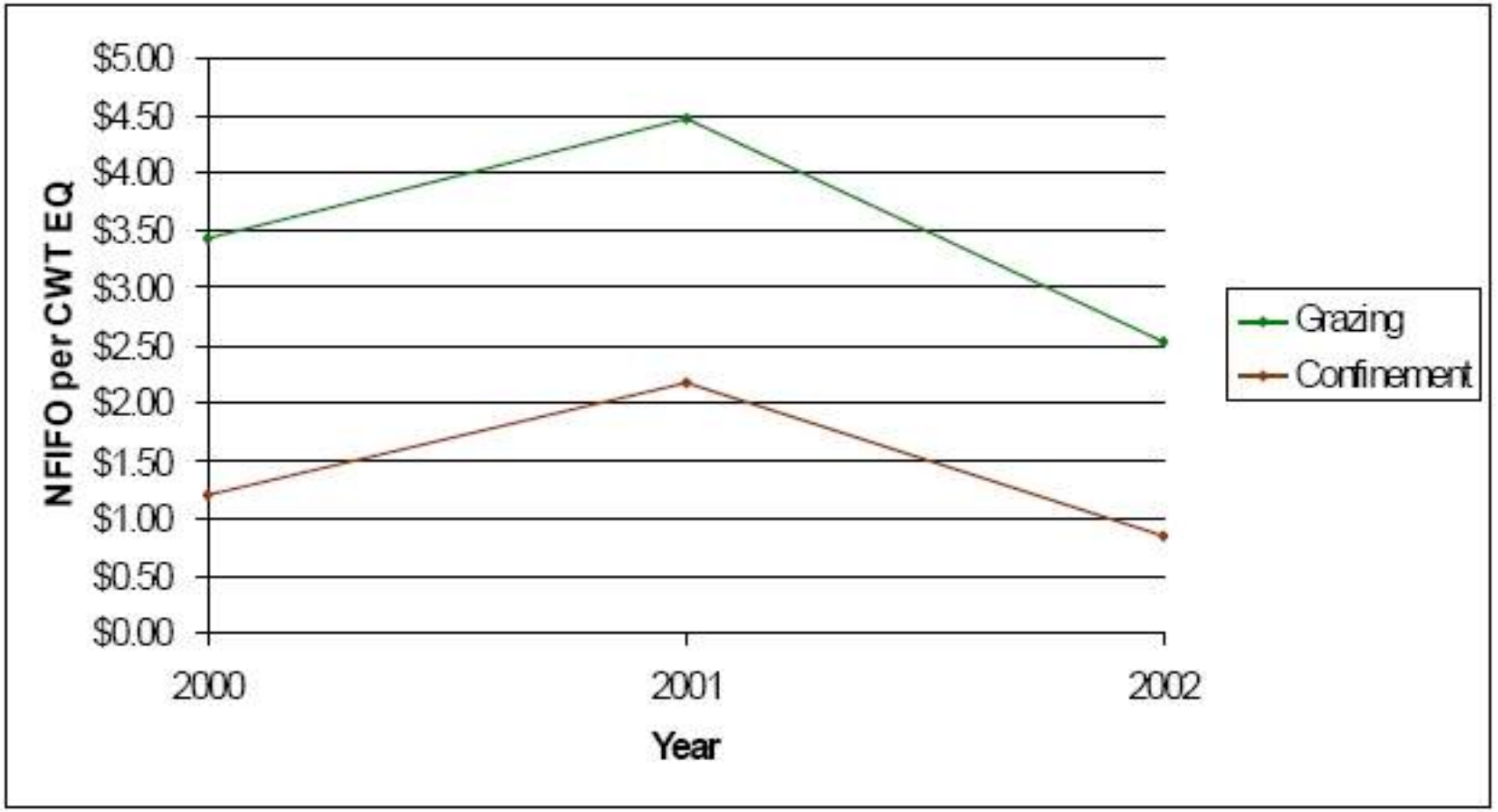
Top Reasons to Adopt Managed Grazing

- Farm Profitability
- Quality of Life

- Improved Environment-
- Soil Health
- Clean Water
- Clean Air

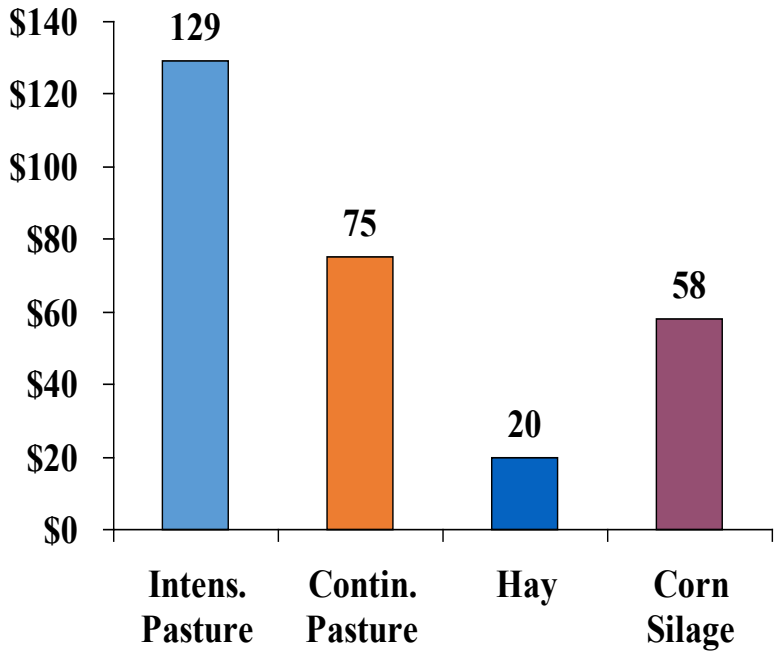
- Improved Herd Health

Financial performance of two dairy types in Wisconsin, 2000-2002



Source: *Dairy Grazing Farms Financial Summary: Regional/ Multi-State Interpretation of Small Farm Data*, April 2004.

Profit Per Acre



Penn State 1992

Livestock Enterprise Comparison

Enterprise	Stocking Rate	Lbs product per acre	Net $ per acre
Cow-calf-low intensity	5 acres	100 calf	$60
Cow-calf-intensive	2 acres	250 calf	$150
Stocker calf-low intensity	1 acre	270 gain	$95
Stocker calf-intensive	0.5 acre	540 gain	$189
Sheep-low intensity	0.5 acre	225 lamb	$113
Sheep-high intensity	0.2 acre	560 lamb	$280

Simple enterprise budget

Expected Gross Revenue (per acre, per head, per marketing outlet)

- **Variable costs**
- **Overhead costs**

= Net return

Paul Dietmann, Badgerland Financial

Breaking out costs

- **Variable Costs**
  - Costs that increase as farm production increases
  - Includes cost of feeder livestock, seed, feed, fertilizer, vet expenses, utilities, trucking, marketing, interest on operating loans, hired labor
- **Overhead Costs**
  - Costs that exist on the farm whether or not anything is being produced
  - Can include depreciation, interest, repairs, property taxes, insurance, value of owner's labor, return on $$ invested

Conventional Corn Enterprise Budget - 2016

170 bushels x $3.40/bushel		$578
Seed	$125	
Fertilizer	$150	
Chemicals/spraying	$40	
Tillage	$50	
Planting	$18	
Harvesting	$32	
Hauling/drying	$30	
Crop ins.	$30	
Operating interest	$10	
	$485	-$485
Land charge	$200	-$200
		($107)

Enterprise budgeting

- Variable costs are relatively easy
- Overhead costs are tougher. We need to annualize and allocate the costs of capital investments *("economic depreciation")*
  - Perimeter fence
  - Pasture establishment
  - Energizer
  - Interior fencing
  - Watering system
  - Machinery & vehicles

Pasture budget

Estimated useful life of capital investments

– Perimeter fence	20 years
– Pasture establishment	5 years
– Energizer	5 years
– Interior fencing	5 years
– Watering system	15 years
– Machinery & vehicles	7 years

Total capital investment: $14,150 ($353.75/ac)

1320'

1320'

40-acre pasture

Perimeter fence: $9,600 ÷ 40 ac ÷ 20 years = $12/ac

Pasture establishment: $1,800 ÷ 40 ÷ 5 years = $9/ac

Energizer: $400 ÷ 40 ÷ 5 years = $2/ac

Interior fencing: $350 ÷ 40 ÷ 5 years = $1.75/ac

Watering system: $2,000 ÷ 40 ÷ 15 years = $3.33/ac

Total economic depreciation = $28.08/acre/year

Pasture Budget

(Per acre, forage dry matter basis)

3.0 tons forage (dry matter) x $120/ton		$360
Fertilizer	$40	
Chemicals	$10	
Electricity	$10	
Labor (moving fence, animals)	$60	
Operating interest	$4	
	$124	-$124
Land charge	$60	
Economic depreciation	$28.08	
5% return on capital investment	$18	
Return on farmer's management	$30	
	$136	-$136
		$100

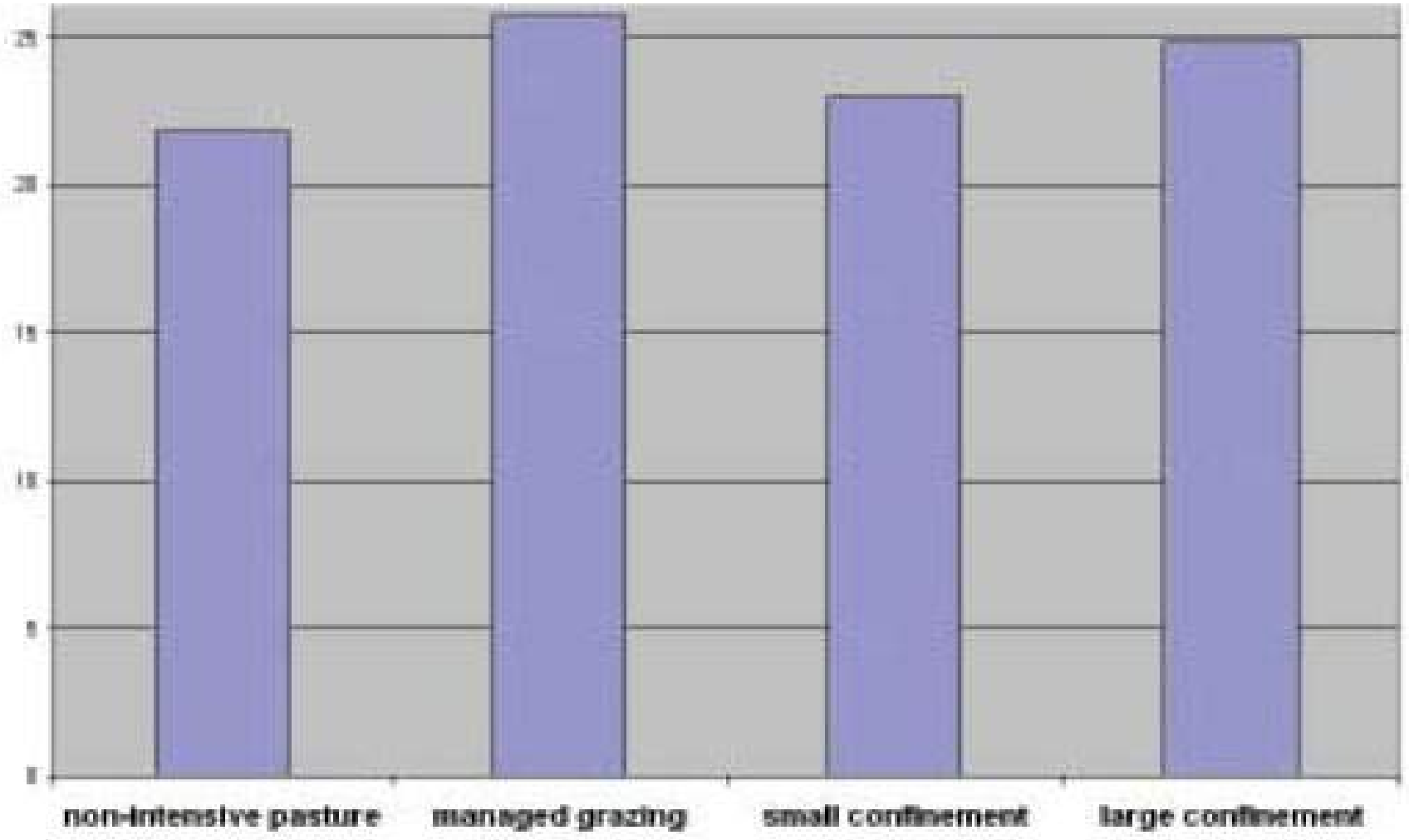
Grass finished steer budget (per head)

Finished steer (667# hanging wt @ $3)	$2,000	$2,000
Cost of yearling 800# x $1.50	$1,200	
Vet & medicine	$8	
Supplies	$10	
Electricity	$11	
Hauling & marketing	$200	
Death loss 1% x $2,000	$20	
Labor	$60	
Operating interest	$30	
	$1,539	-$1,539
Land charge	$90	
Economic depreciation	$42.12	
Return on equity investment	$27	
Return on management	$45	
	$204	-$204
Return per head		**$257**
Return per acre (1 steer per 1.5 acres)		**$171**

Breakeven to cover variable costs
$1539/667# = $2.31/lb

Breakeven to cover ALL costs
$1743/667# = $2.61/lb

Figure 1. Overall satisfaction with life*



*scale is average sum of 5 questions each with a high score of 7; a high score indicates a higher level of satisfaction


• Environmental Aspects of Managed Grazing

Soil Erosion in Wisconsin – Water Erosion on Cropland Average 3 Tons/Ac. Annually

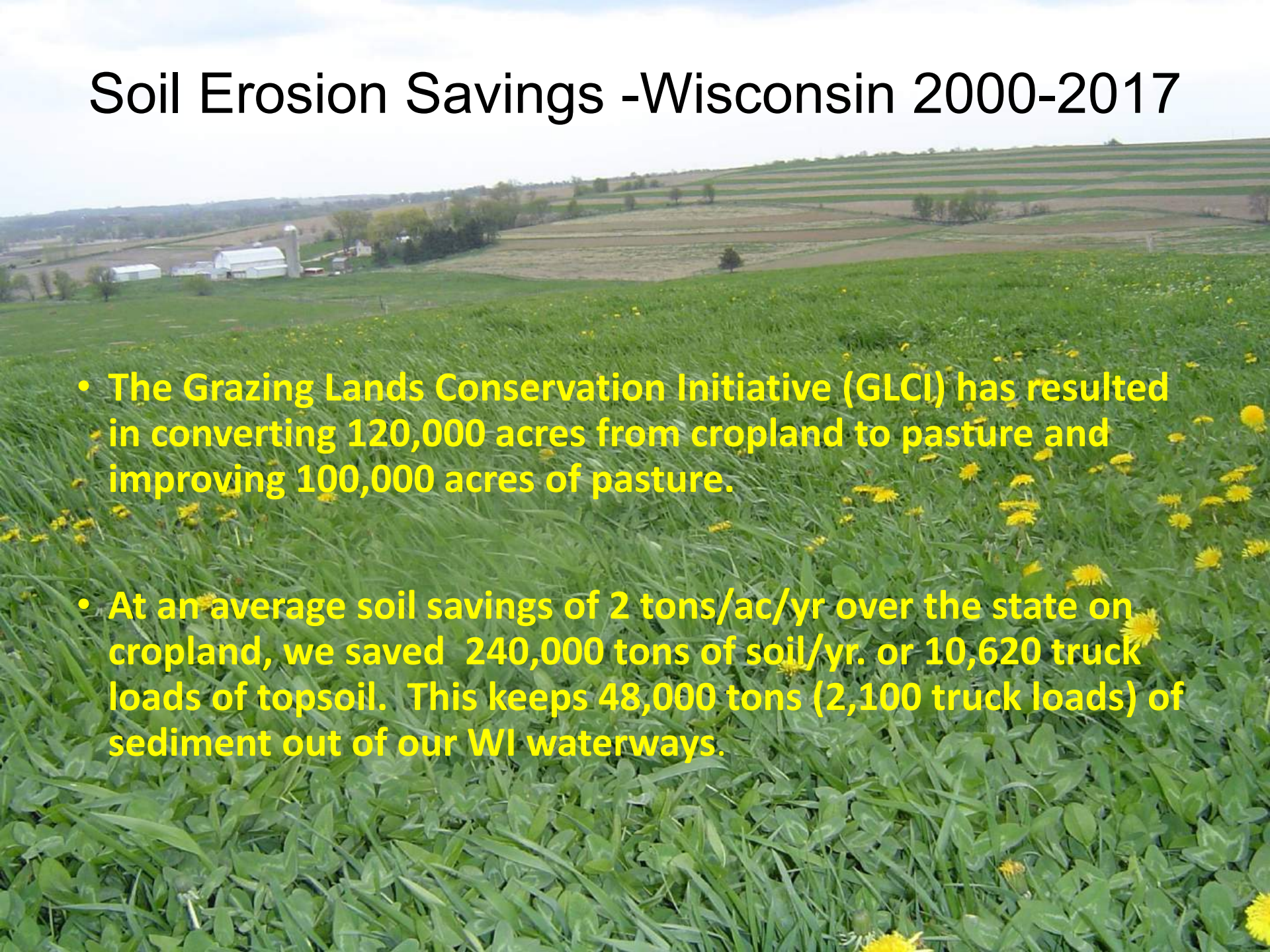
Sedimentation Occurs Even on Flat Slopes

Managed Grazing creates a healthy pasture with a canopy of sod and a thick, deep root system to hold the soil.

Soil Loss Estimates – UWEX Discovery Farms

Scenerio	Cropping History	Average Soil Loss/Acre/Year (RUSLE2)	Total Tons of Soil Loss
Actual	**Managed Intensive Grazing (MIG)**	***0.40***	***80.3***
1	**C.Sil -C.Grain - Oat/A - (3) Alf** Corn Silage (No-Till - 40%) Corn Grain (No-Till - 10%) Oat/A (Spring Tillage - 30%)	***0.65***	***132.1***
2	**Corn Grain-Soybeans** Corn (No-till - 50%) Soybeans (No-till - 50% narrow)	***1.37***	***278.3***
3	**(2) C. Silage - (3) Alf** Corn Silage (No-till - 40%) Corn Silage (No-till - 10%) Alfalfa (Spring Tillage - 0% Direct Seeding)	***1.63***	***331.0***
4	**Corn Grain-Soybeans** Corn Grain (Spring Tillage - 30%) Soybeans (Spring Tillage - 30%)	***2.45***	***497.6***
5	**Corn Silage -Soybeans** Corn Silage (Spring Tillage - 20%) Soybeans (Spring Tillage - 0% wide)	***5.57***	***1131.2***

Soil Erosion Savings -Wisconsin 2000-2017



- **The Grazing Lands Conservation Initiative (GLCI) has resulted in converting 120,000 acres from cropland to pasture and improving 100,000 acres of pasture.**

- **At an average soil savings of 2 tons/ac/yr over the state on cropland, we saved 240,000 tons of soil/yr. or 10,620 truck loads of topsoil. This keeps 48,000 tons (2,100 truck loads) of sediment out of our WI waterways.**

Managed Grazing Impact on Surface Runoff – USDA Watershed Survey, Coshocton, OH

Surface Runoff – Winter and Summer

- Nitrogen and phosphorous concentrations in surface runoff from pasture were well below EQP's limits.

- Nitrogen averaged 3-4 ppm on winter paddocks and less than 1 ppm on summer paddocks.


Cropland
Watershed
Pastured
Watershed

Effects of Managed Grazing on Groundwater

Nitrogen leaching can occur under urine spots, but mass transport is much less

Groundwater Study Results :

- ✓Initially high NO_3-N concentrations but de-nitrification occurs rapidly in shallow groundwater.

- ✓NO_3 - N under grass-legume pasture is always below EPA standard (10 ppm)

- ✓ Nitrogen application should be in split applications, May and August.


Managed Grazing Impacts on Riparian Areas
Stream Bank Stability
Fisheries

Improving Riparian & Aquatic Habitat

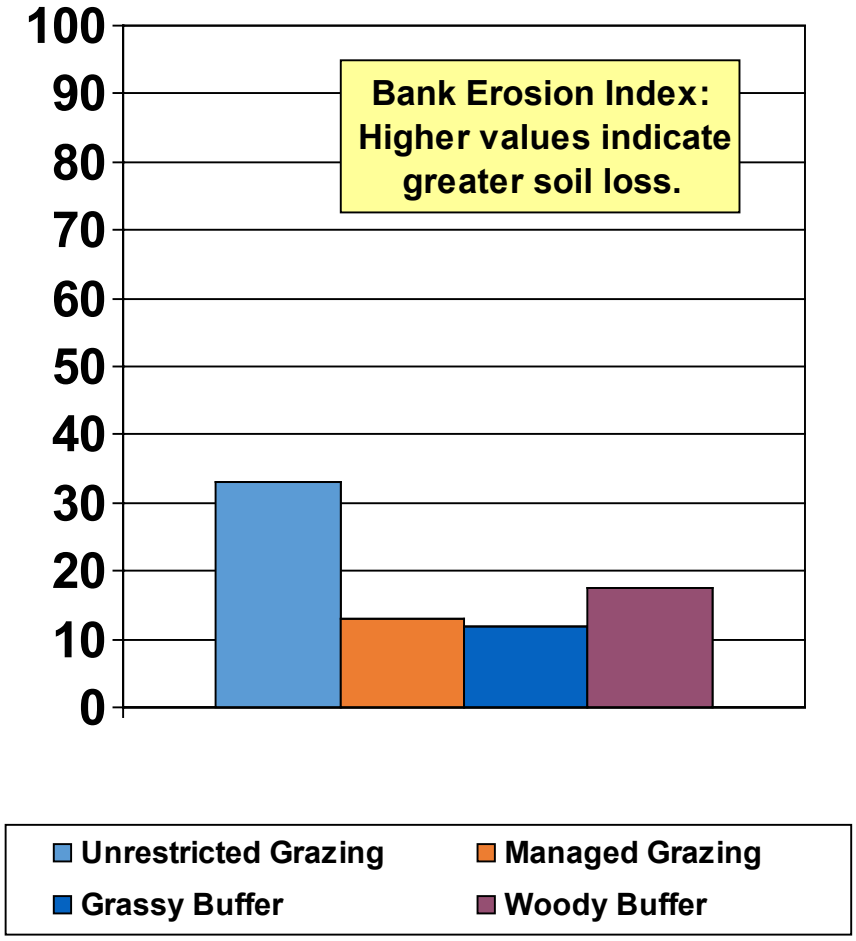
Grassy Buffers

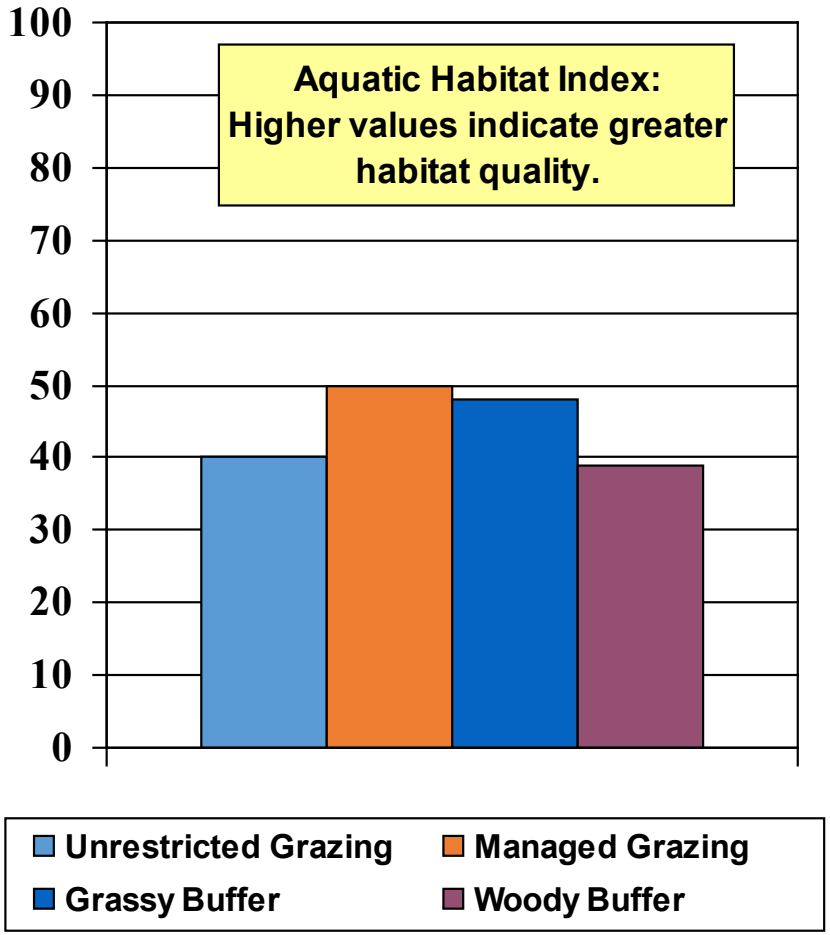
Managed Grazing

Unrestricted Cattle Access

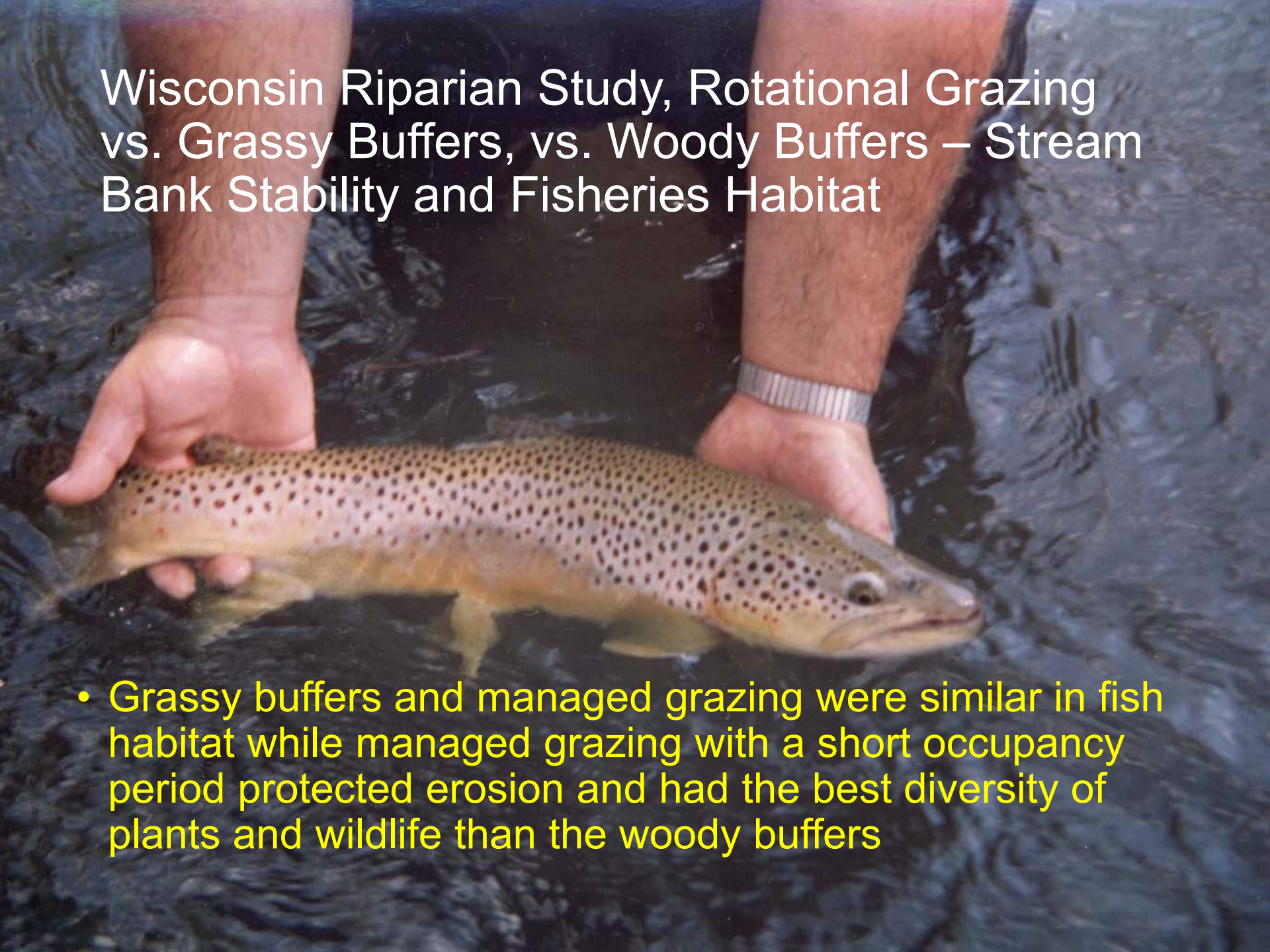
Woody Buffers

Improving Aquatic Habitat





Wisconsin Riparian Study, Rotational Grazing vs. Grassy Buffers, vs. Woody Buffers – Stream Bank Stability and Fisheries Habitat



- Grassy buffers and managed grazing were similar in fish habitat while managed grazing with a short occupancy period protected erosion and had the best diversity of plants and wildlife than the woody buffers

Reducing Stream Bank Erosion

By providing rock surfaced crossings for livestock to access streams we can minimize impact on bank erosion.

Grassland Birds

"Creatures of Structure"

→ Short grass (low litter)

↓

Woody Growth

→ Mid grass (medium litter)

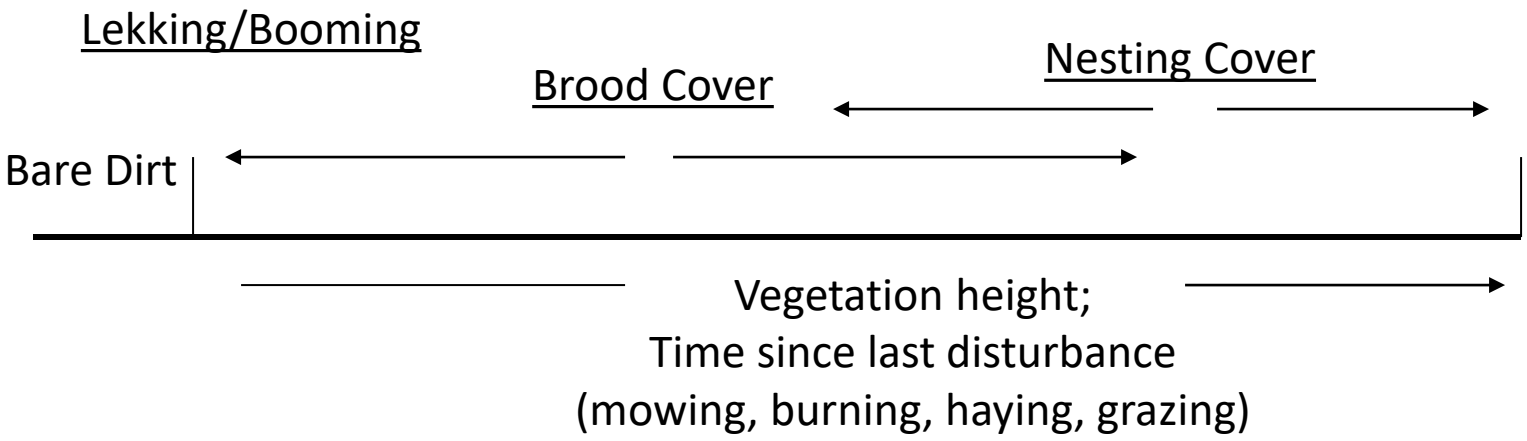
→ Tall grass (high litter)

↓

High forb/grass ratio

Grassland Bird Management Regime

Greater Prairie-Chicken Needs
(Umbrella Species)



Horned Lark
Killdeer

Vesper Sparrow
Grasshopper Sparrow
Upland Sandpiper
Western Meadowlark

Savannah Sparrow
Eastern Meadowlark
Bobolink

Henslow's Sparrow
Sedge Wren

Northern Harrier
Short-eared Owl
(Area-sensitive)

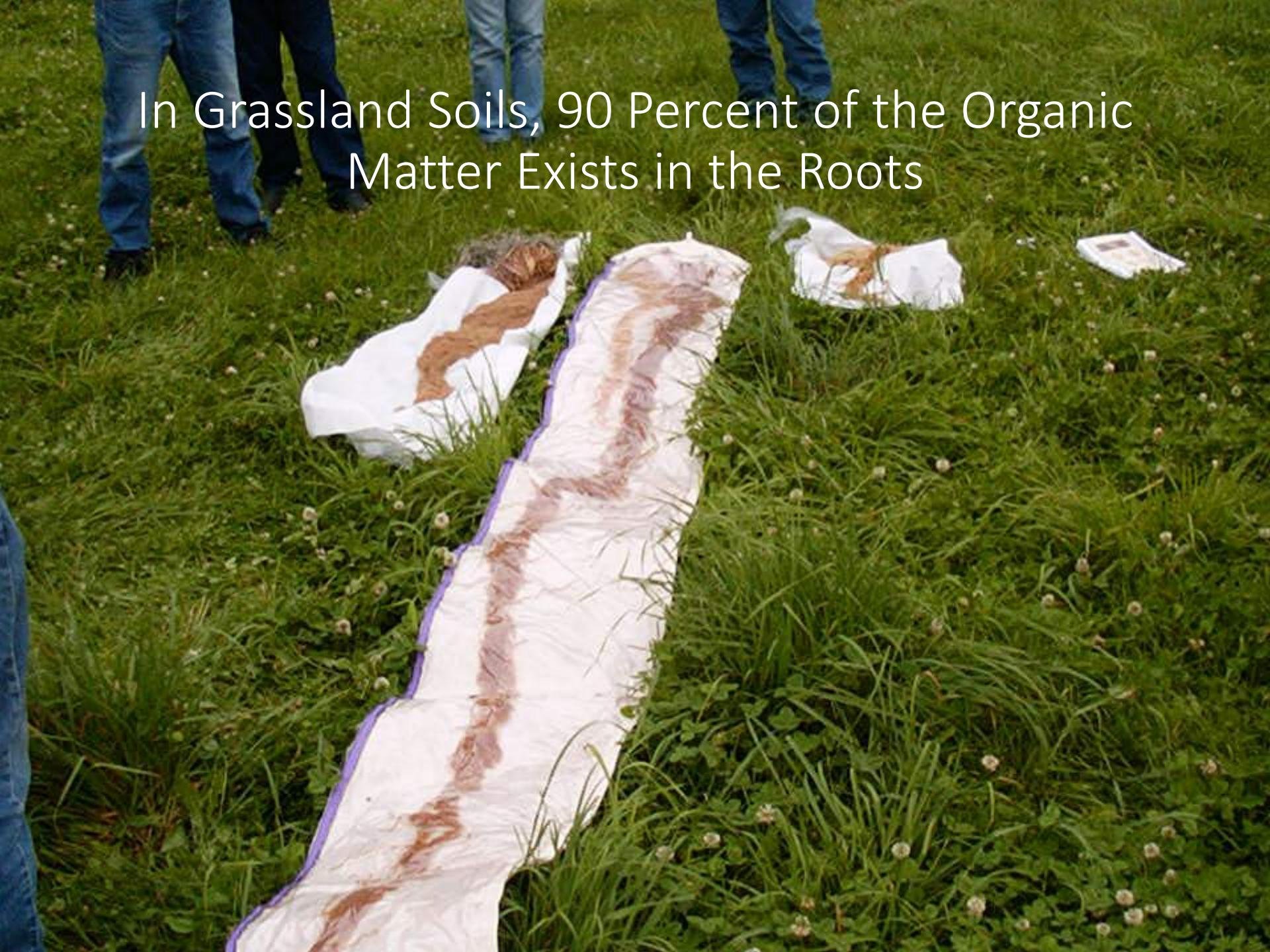
Rotational Grazing and Grassland Songbirds

- 4-5 inches of residual is important for nesting.
- Moving cattle through paddocks quickly in nesting season and top grazing will minimize nest trampling. Later on in late summer, take more forage.


The Future of Grassland Birds Depends on Farming Remaining a Critical Component of the Habitat

Managed Grazing Results in Increased Soil Carbon Reservoir and Improved Soil Health

In the Wisconsin Integrated Cropping Trials over 30 years, of all the cropping rotations, only Managed Grazing has a total positive carbon gain in the top 8 inches of soil

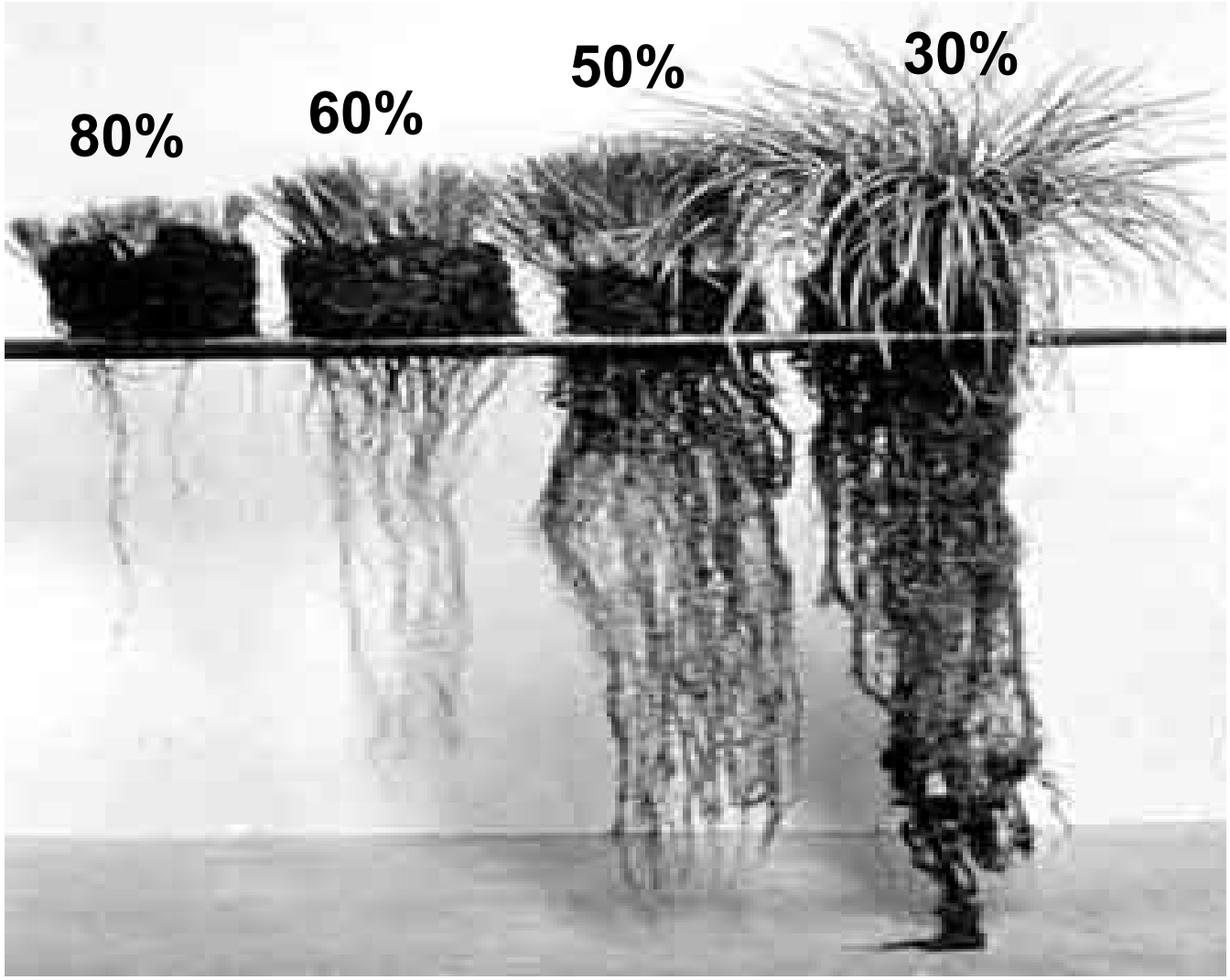

In Grassland Soils, 90 Percent of the Organic Matter Exists in the Roots

By Converting Cropland to Rotationally Grazed Pastures, Researchers Have Seen an Average Increase In Soil Carbon Content of 1 Percent (or 2 Percent Organic Matter) Over 20 Years. This = 20 tons/ac Soil Carbon

Principles to Improve Soil Health

- **Use *plant diversity* to increase diversity in the soil.**
- **Manage *soils* more by *disturbing* them *less*.**
- ***Keep plants growing* throughout the year to feed the soil.**
- **Keep the *soil covered* as much as possible (*hydrology*)**

Overgrazing: Disturbs Soil and Reduces Root Systems



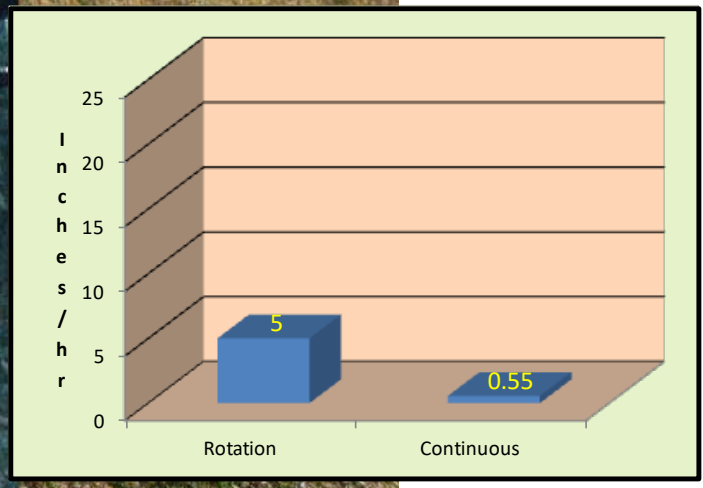

09/19/2009

Deuel County Barnes soil Fence-line contrast

Continuous Grazing

Rotational Grazing

Infiltration Rate

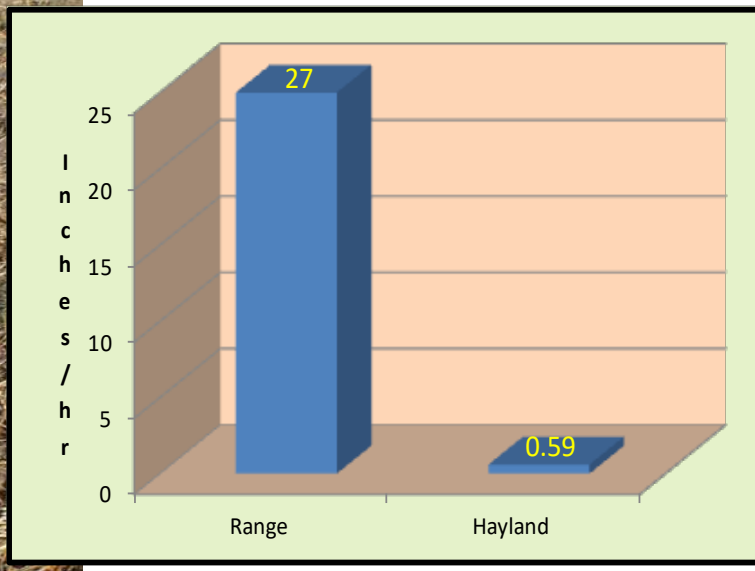


August 2007

Infiltration - Barnes

Mellette County Kube soil

Infiltration Rate

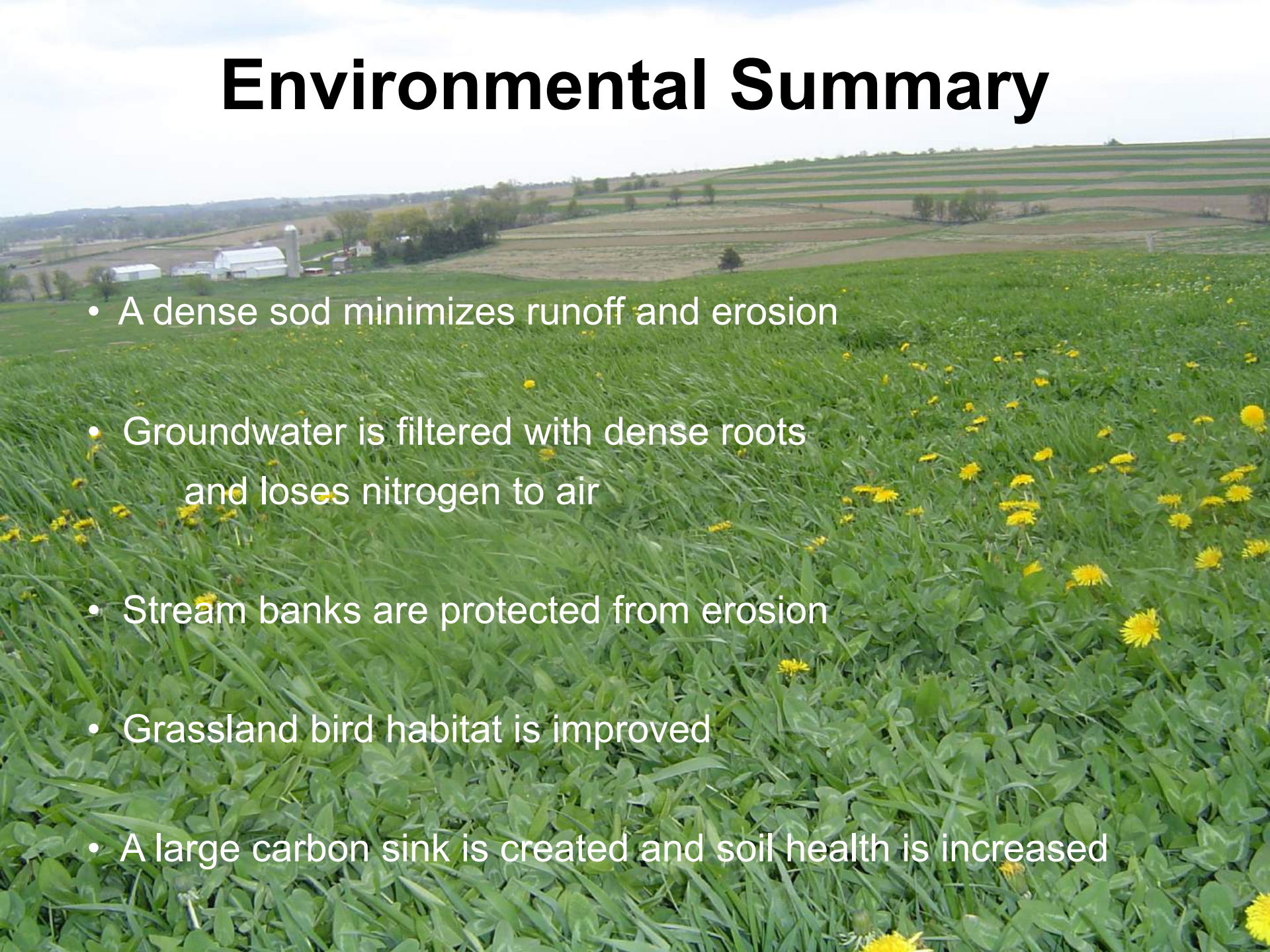


August 2012

Rotational Grazing

Hayland/ Cropland

Environmental Summary

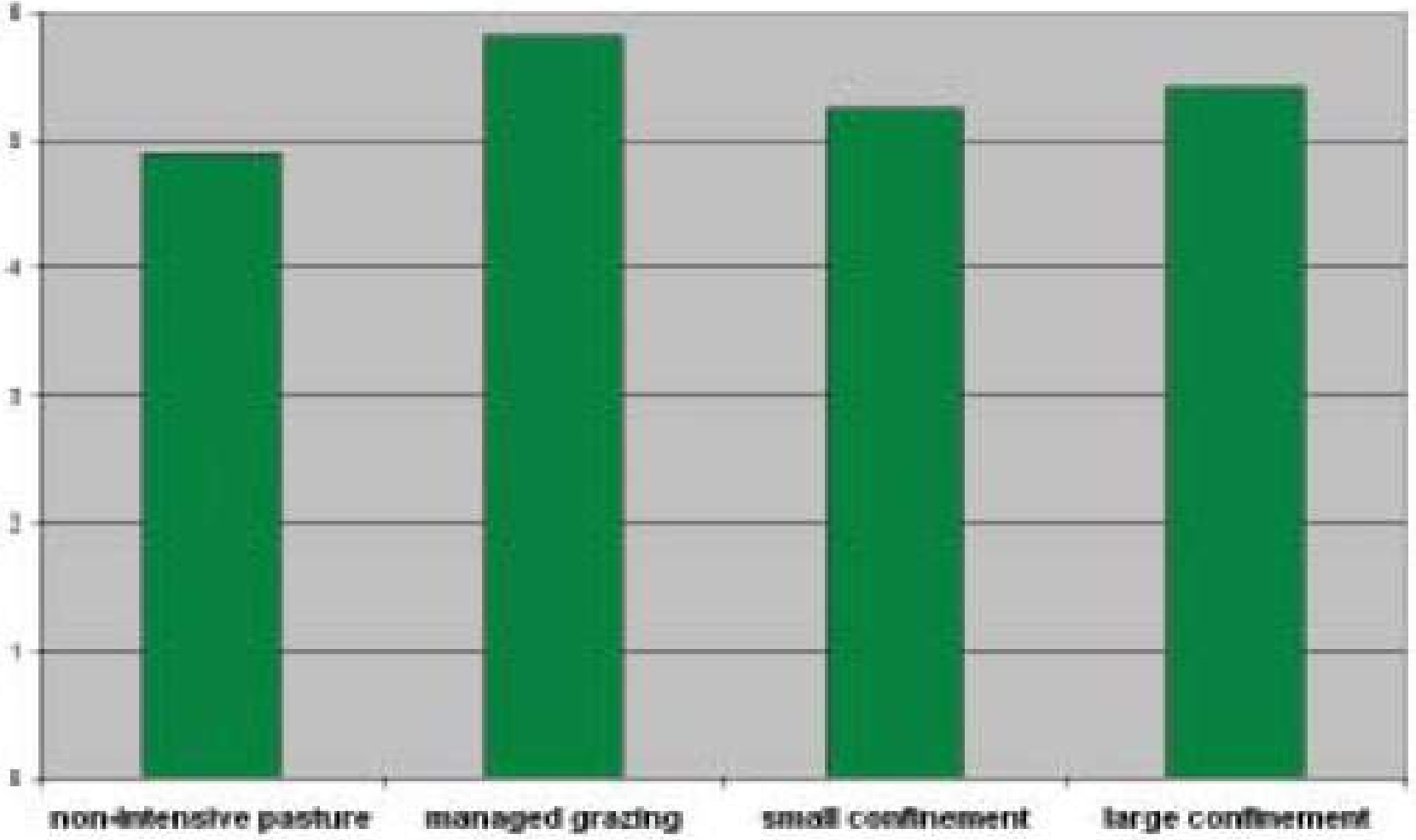


- A dense sod minimizes runoff and erosion
- Groundwater is filtered with dense roots and loses nitrogen to air
- Stream banks are protected from erosion
- Grassland bird habitat is improved
- A large carbon sink is created and soil health is increased

Improved Livestock Health

- Improvements:
- Decreased foot and leg problems
- Lower incident of respiratory diseases
- Fewer calving problems
- Greater life longevity

Figure 2. Satisfaction with dairy herd health**



**scale is average score on herd health question out of a high of 7; a high score indicates a higher level of satisfaction

Characteristic of Successful Operations*

- **A lifelong approach to management needs to be both integrative and holistic.**
- **We must strive for continuous improvement of the key resources. On most farms these will be land, livestock and people; but could expand to include wildlife or other resources.**
- **We must assemble and use good analysis and decision- making tools.**
- **We must wage war on cost.**
- **We must place an emphasis on marketing**

*** Burke Teichert, retired vice president and general manager of Ag Reserves Inc. (a.k.a. Deseret)**

Thank You!

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