

Upper Midwest Grazing Educators Webinar Series

Green Lands Blue Waters



Integrating Livestock into Cropping Systems

August 7, 2015

Hosted by Warren King and Jane Jewett



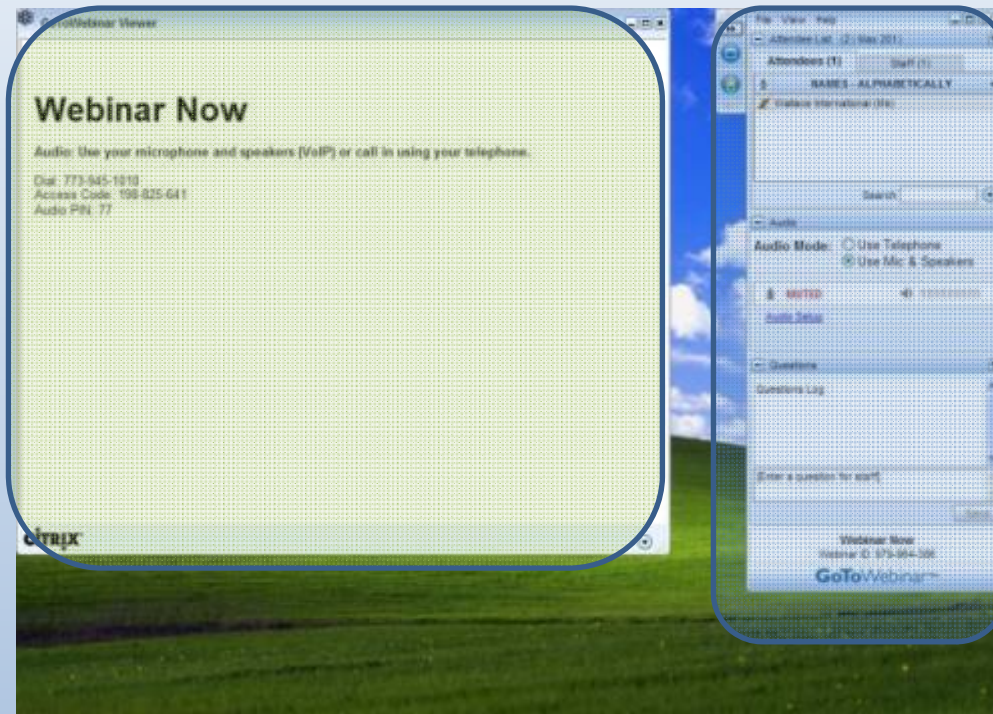
- Co-manager of the Pasture Project
- President of WellSpring, Ltd
- Work focused on expanding environmentally sustainable farming, developing local & regional food systems and improving water quality



- Research Fellow, University of Minnesota
- Green Lands Blue Waters Initiative

Webinar Technical Orientation

Your Starting Screen

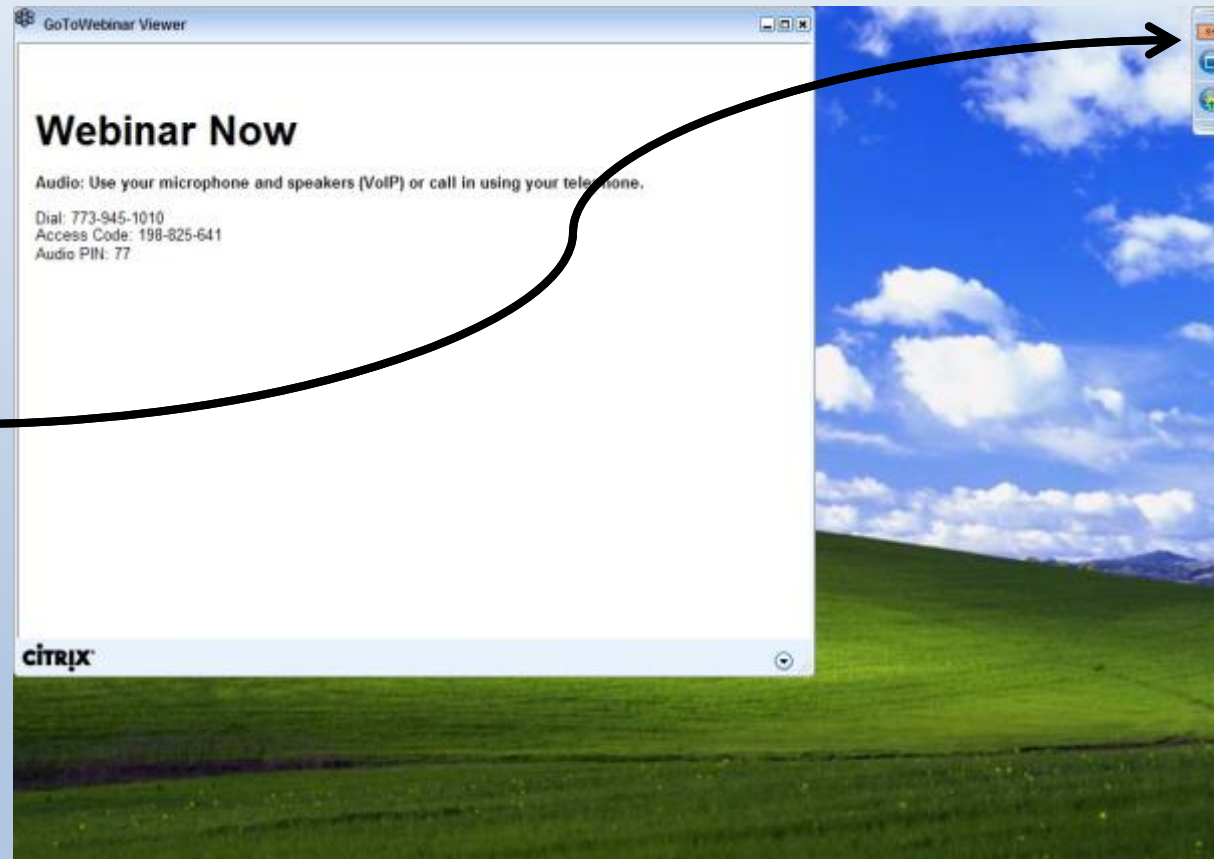


Presentation

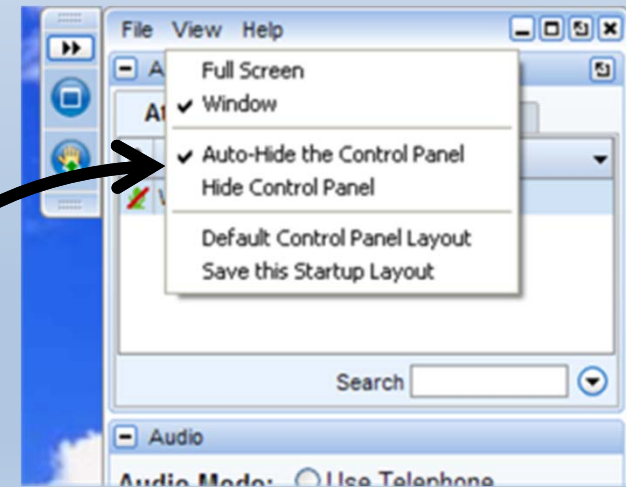
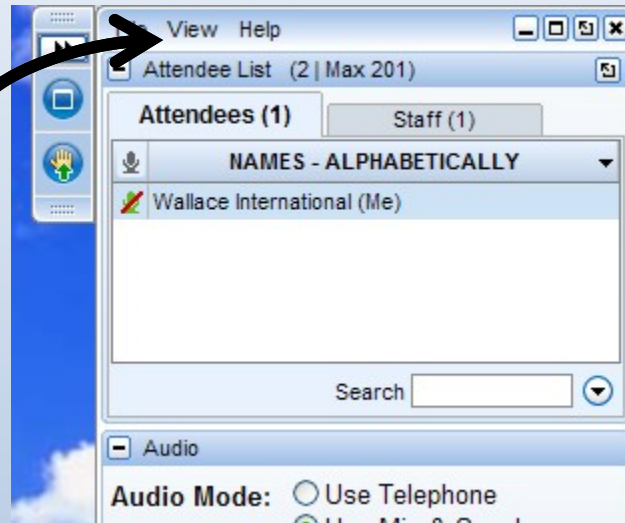
Control Panel

To Display Minimized Control Panel

Click the
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To Keep Control Panel Visible

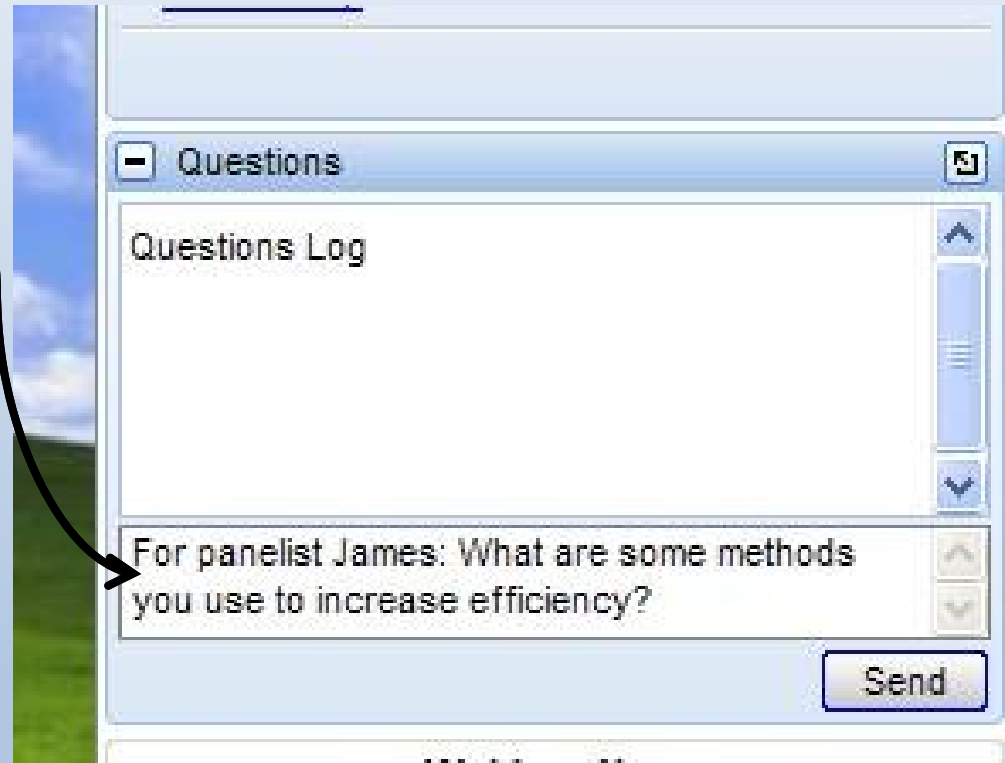


To Ask a Question

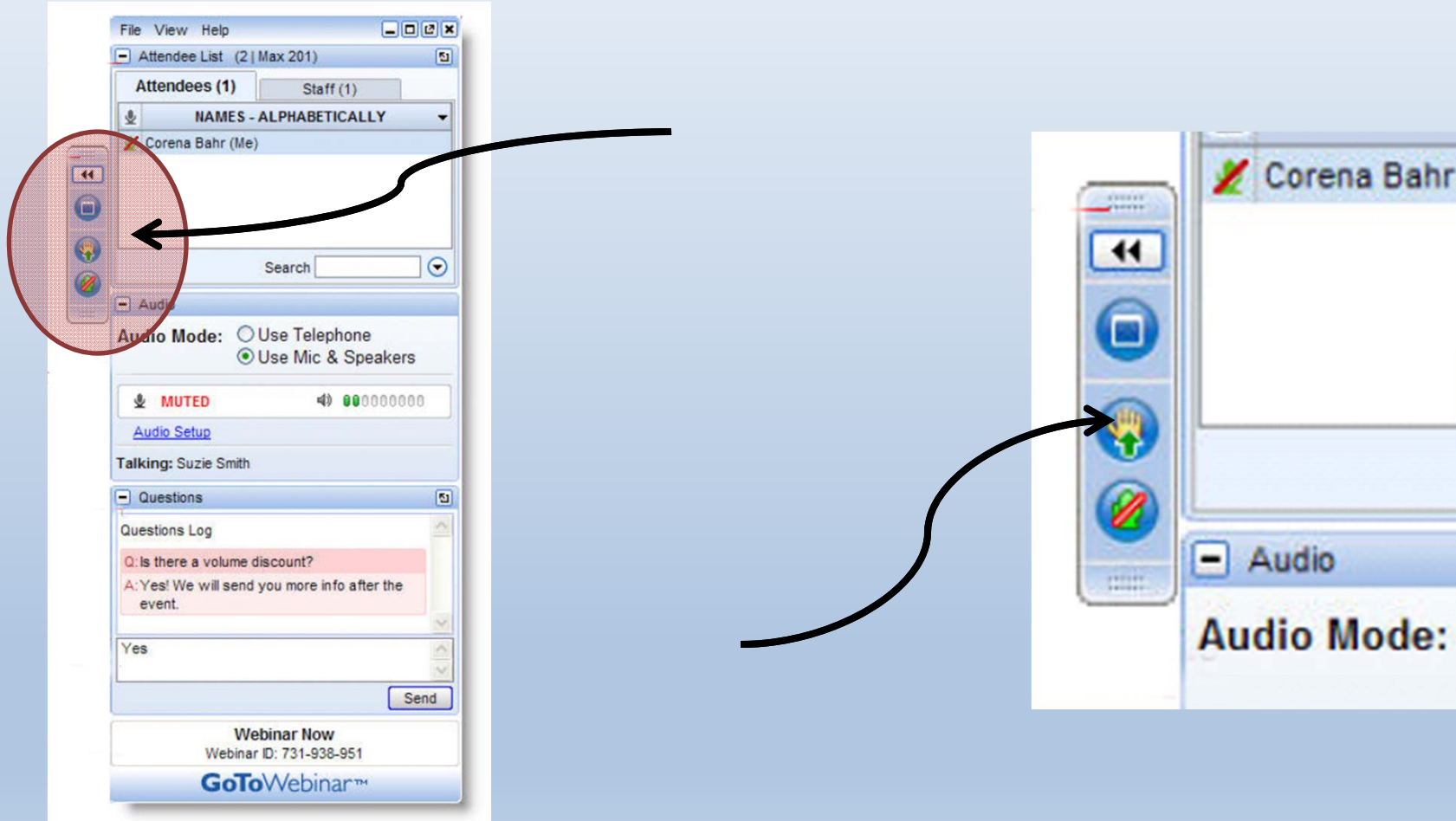
Type your question in the small box at the bottom of the Questions box.

If possible, specify which panelist(s) you are addressing with your question.

Press "Send"!



To “Raise Your Hand”



Post-Webinar Survey

- We will be sending out a survey following the webinar.
- These surveys help to make for a better experience for everyone involved, if you could please take a moment to fill them out, it would be of great help to us.



Who's Sponsoring the webinar series?

Green Lands Blue Waters

Goals

- Increase perennial forage and pasture
- Improve environmental performance of farming
- Maintain production and profitability

The Pasture Project

Goals

- Expand grass-based livestock production
- Accelerate transition to sustainable farm production
- Improve water quality

Why Focus on Grazing Educators?

- The Upper Midwest is a unique geography
- More young farmers are interested in livestock production
- More landowners and conservationist are interested in livestock benefits
- More consumers want pasture raised meat and dairy products
- Less public funding for grazing networks and education
- Fewer professional development opportunities for educators
- Changes in grazing techniques and terminology
- No single source for education materials

What Could a Grazing Educator Network Achieve?

- Connect Upper Midwest Educators through discussion and sharing
- Assess education materials-tool; determine what's missing and fill the gaps
- Create a platform to house and access materials and tools
- Share what works and why
- Cross-pollination of staff, students, apprentices and programs
- Involve established grazing education programs
- Access materials-tools no longer in circulation
- Build collaboration that is more “grass-roots” than “top-down”
- Include educators of various types; farmers, academics, agency and consultants
- Establish basic principles of managed grazing that are taught by all

What is the format for today's webinar?

- **Presenters will discuss topics, sharing experience and insights**
- **Audience is encouraged to do the same**
- **Moderators will “direct the traffic” and keep discussion moving**
- **Audience is asked to take a brief survey at the end of the webinar**



- H. Joe Sellers is an ISU Extension beef specialist working in Lucas County where he also is co-owner and partner in a farm operation.
- Since 1987 he's advised extension clients on grazing and beef and sheep management in southern Iowa.
- He led the Chariton Valley Beef value-added beef initiative and several other custom grazing and forage demonstration projects supported by the Leopold Center.
- His contributions have been recognized by county, state and national organizations. He served on the board of directors of the Iowa Forage and Grasslands Council and the South Central Iowa Area Partnership.
- He has degrees in animal science and agricultural education and studies from Iowa State University.

Integrating livestock into cropping systems

Joe Sellers

Duane and Jodi Steenhoek

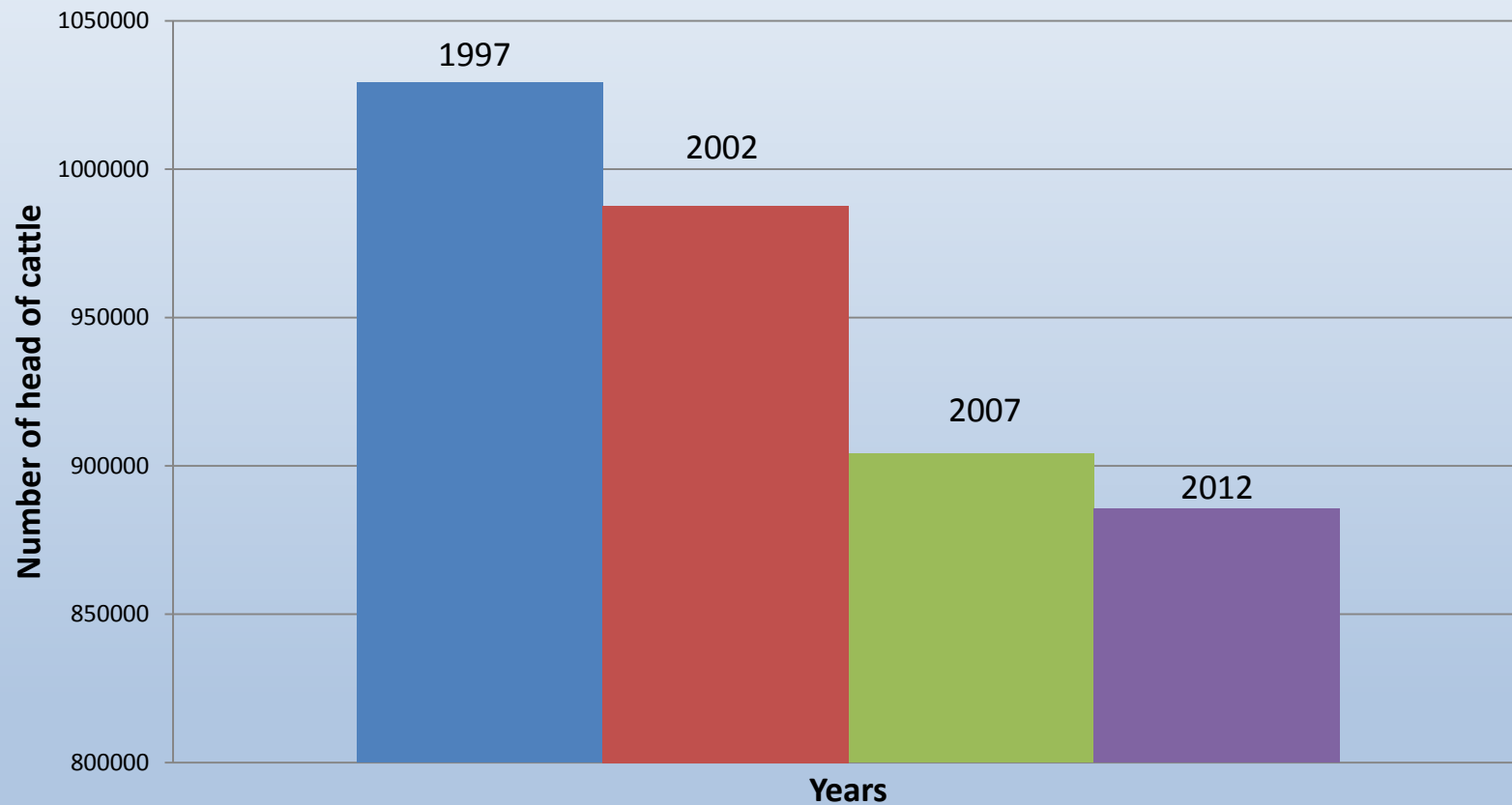
Midwest farms have combined pasture and row crops



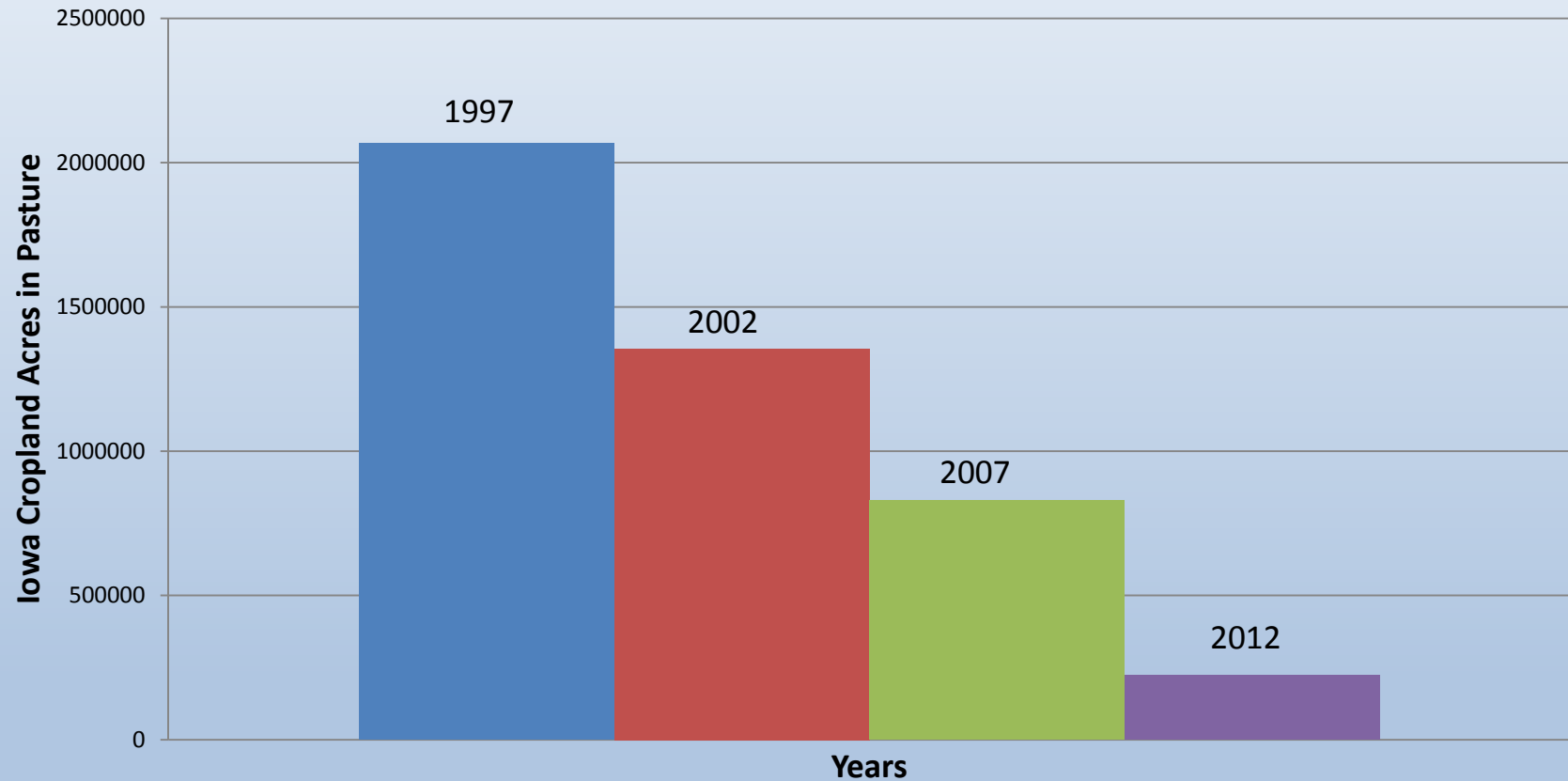
Where has all the pasture gone?



Iowa Beef Cow Herd (Number of Cows, USDA Census)



Decline in cropable pasture (Acres, Census of Agriculture)



Decline in Cropable Pasture in the Midwest

(<http://iopscience.iop.org/1748-9326/10/4/044003/>)

- 2008-2012
 - Minnesota cropland was increased by 215,000 acres
 - Illinois by 81,000 acres
 - Wisconsin by 157,000 acres
- Uncultivated Land pre-1970 converted to cropland between 2008-2012
 - In Minnesota, previously uncultivated land accounted for 22,000 acres converted to cropland
 - In Illinois, 8,800 acres
 - In Wisconsin, 14,000

Nationwide, grasslands account for 77% of all cropland conversions.

Data collected from "Cropland expansion outpaces agricultural and biofuel policies in the United States, Tyler J Lark et al 2015 Environ. Res. Lett.

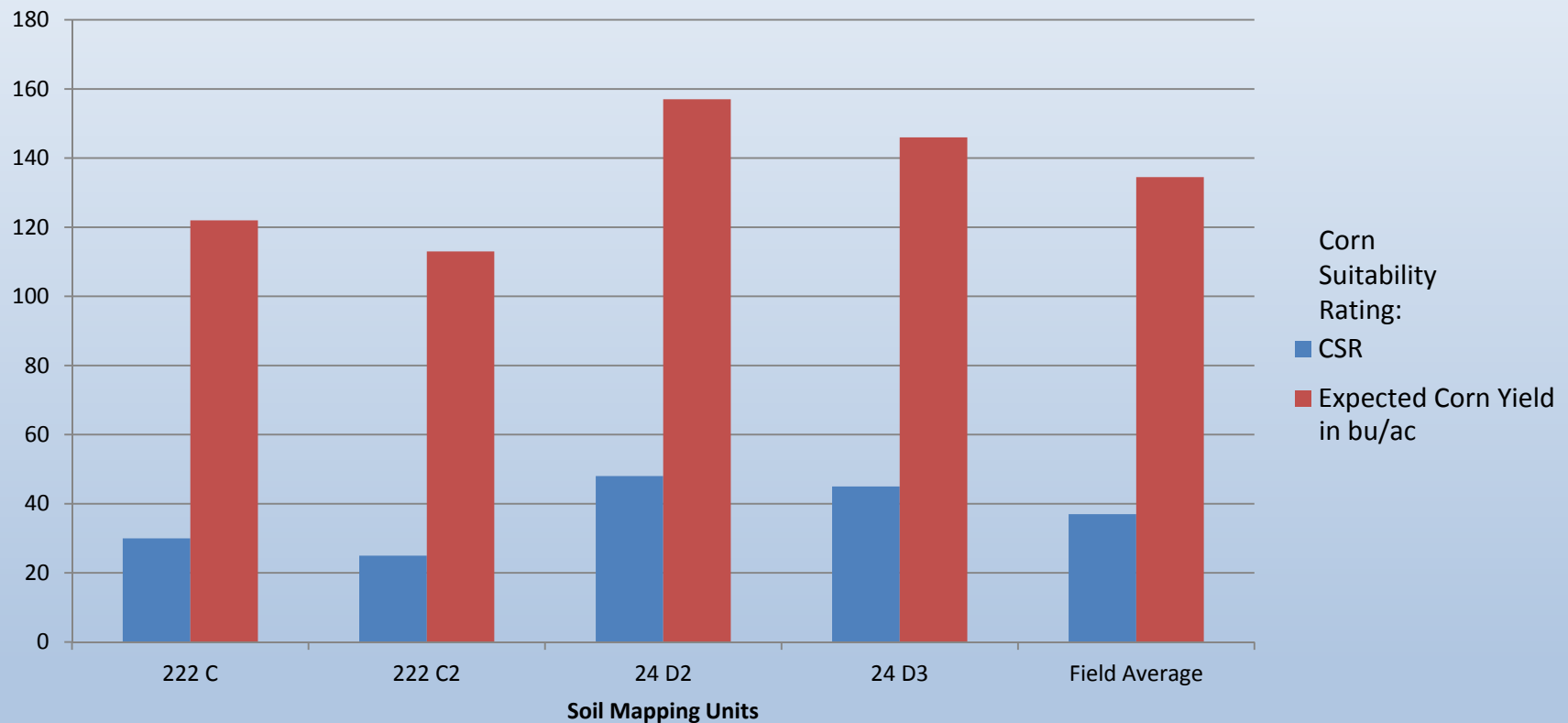
Forage on the side hills, crops on the ridge



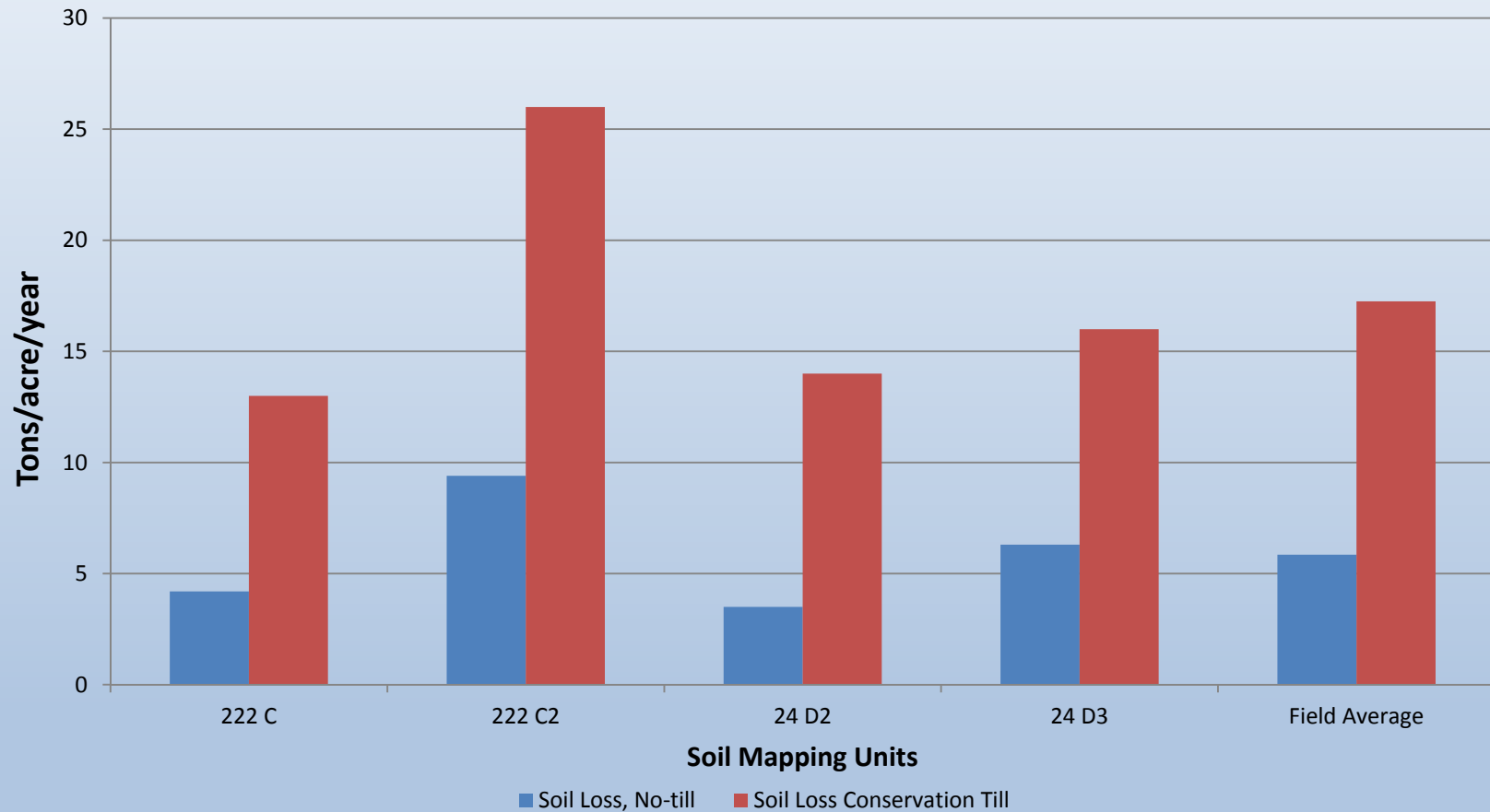
What led to less diversity?

- 1980's Farm Crisis
 - Assets “walked off the farm to cover debt”
 - Loss of a generation with basic animal husbandry knowledge
- USDA commodity programs and insurance subsidies
- Aging farmer base
- Capital requirements, price volatility

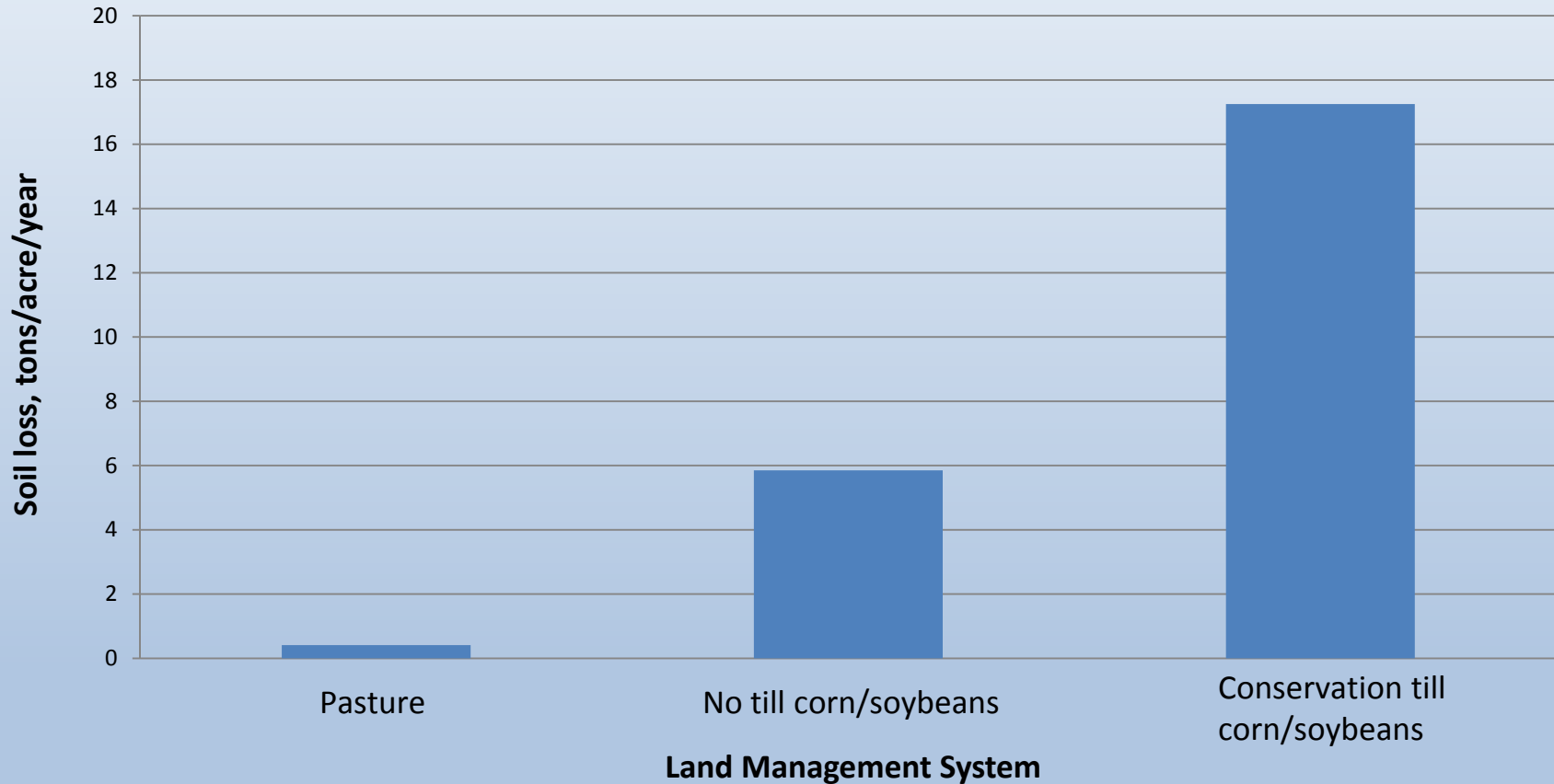
Corn and soybean rotation is not best use of some marginal soils (Iowa CSR2)



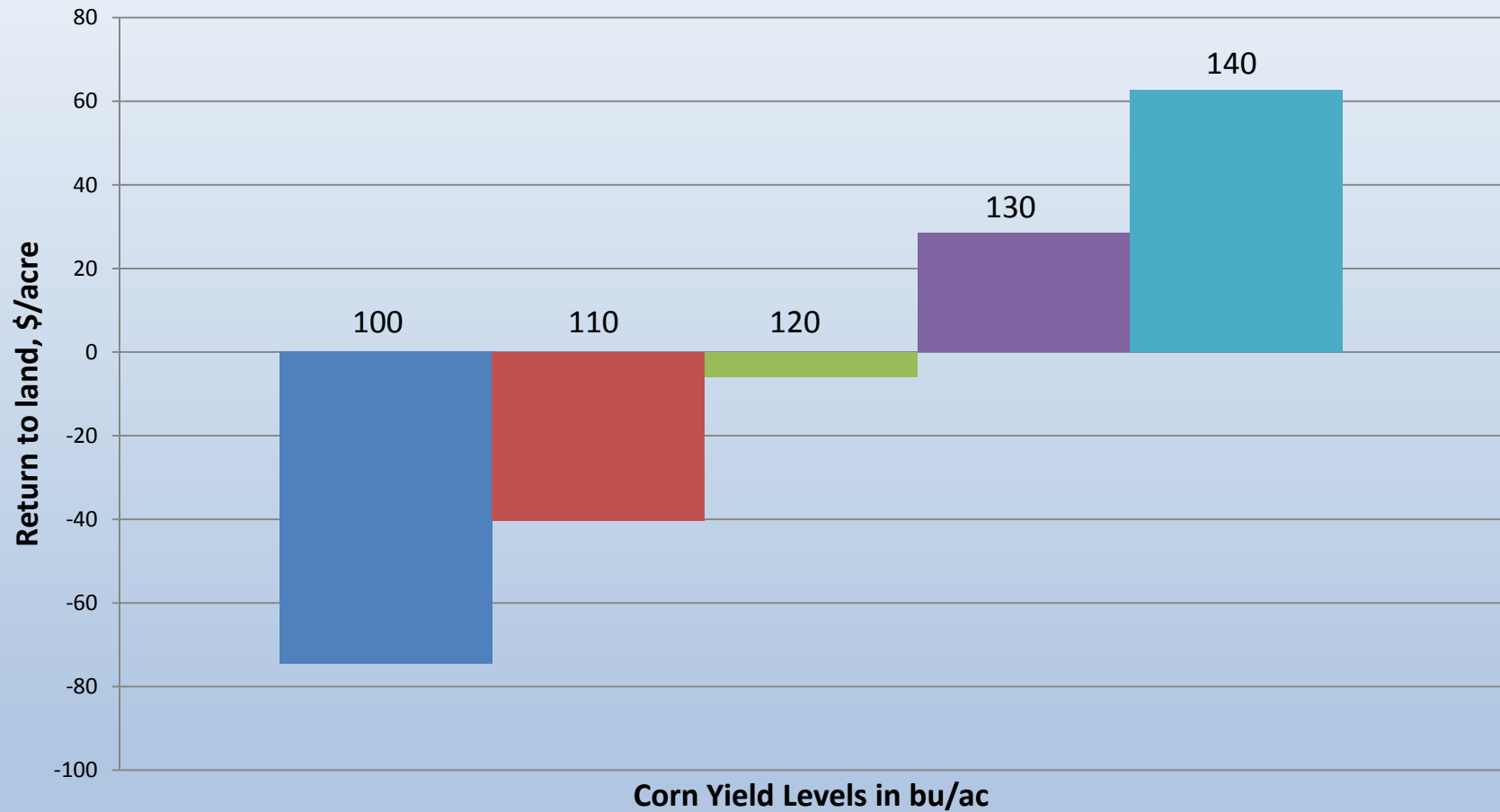
Soil loss – corn/soybean rotation (RUSL2)



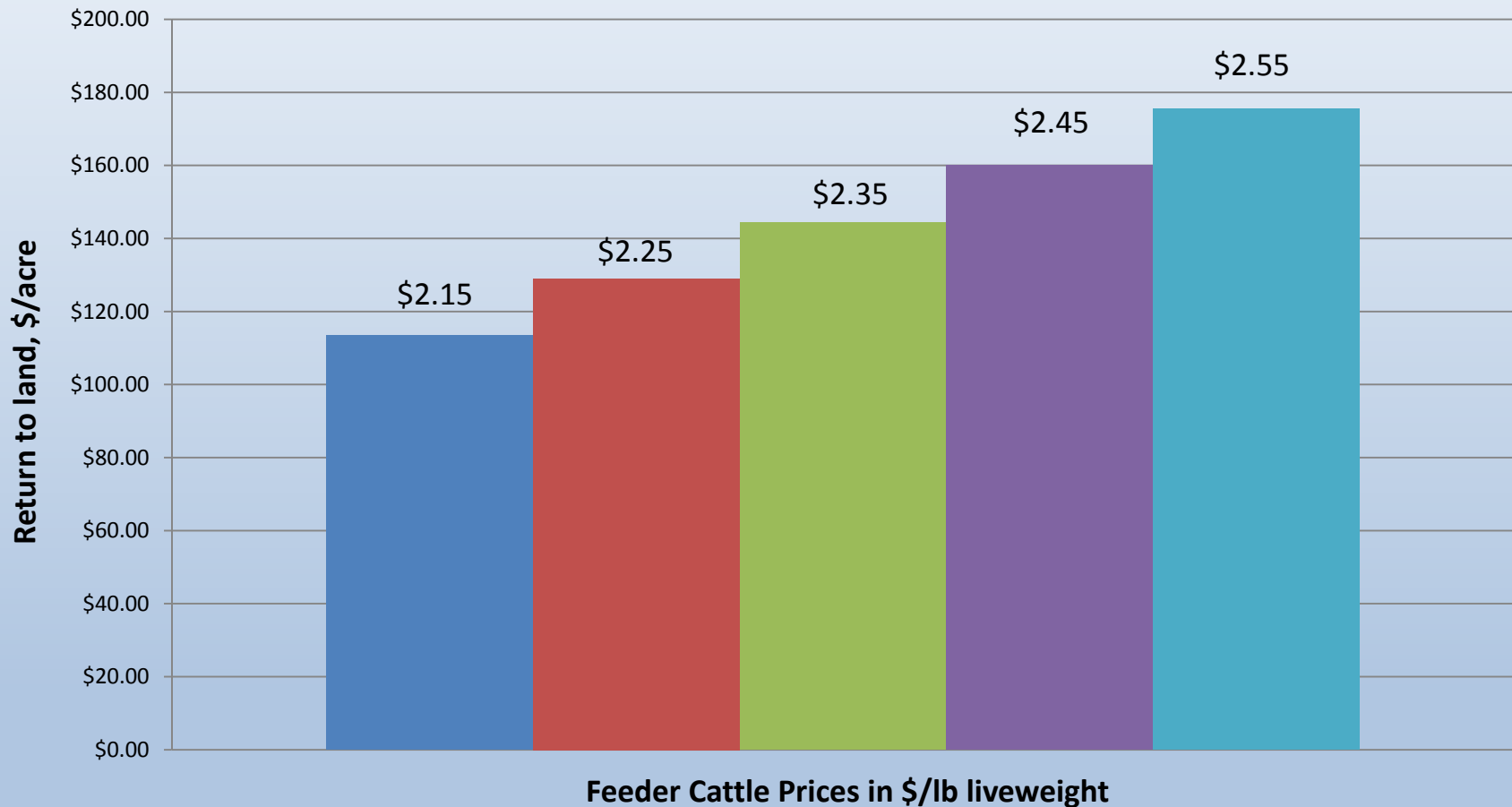
Nothing compares to well managed pasture(RUSLE2) Average example field soil loss



Return to land (per acre), by corn yield, \$3.50 per bushel harvest price (Land Use Analyzer)



Return to land, cow-calf (Projections, Ag DecisionMaker)



ISU Extension and Outreach Land Use Analyzer

- Look at productivity, soil erosion potential and economics of land use choices
- Crop and livestock land use analyzer
 - <http://www.extension.iastate.edu/agdm/wholefarm/html/c1-15.html>
 - Land owners from other states can use the budget portions by entering their own yields, costs, etc.

Land Use Analyzer

<http://www.extension.iastate.edu/agdm/wholefarm/html/c1-15.htm>

Ag Decision Maker


Recent Updates Information Files Decision Tools Teaching Activities Voiced Media Outlook & Profitability

Whole Farm > Cost & Return > Budgeting & Analysis


Homepage
Crops
Livestock
Whole Farm
New Business Development
Renewable Energy

Meet the author

William Edwards
retired economist
Questions?



Stay up-to-date with AgDM



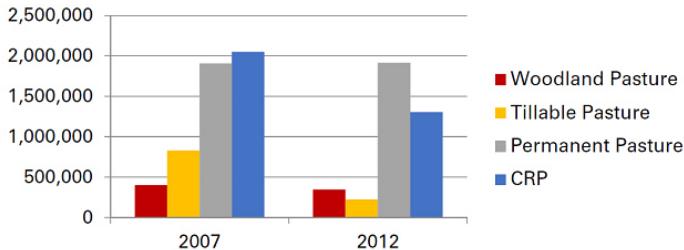
Crop and livestock land use analyzer

Due to rolling terrain and highly variable soil characteristics, land in some regions of Iowa has a variety of possible uses related to agriculture as well as conservation and recreation. Landowners and operators must take a long-range view when making decisions about the highest and best use of their land. Their primary agricultural alternatives are:

- Harvested crops, including corn, soybeans, small grains and forages
- Pasture to support livestock enterprises, such as cow/calf, stocker cattle and sheep flocks
- Long-term retirement such as the Conservation Reserve Program (CRP)

The figure below shows the mix of pasture and CRP uses in Iowa, and how they changed from the 2007 Census of Agriculture to the 2012 Census. Total pastureland declined by 21 percent in five years. Most of the decline came in "tillable" pasture land, that is, land that could be converted from pasture to harvested crops without improvements. CRP acres also decreased, by 36 percent.

Figure 1. Acres in Pasture and CRP, Iowa



Year	Woodland Pasture	Tillable Pasture	Permanent Pasture	CRP
2007	~400,000	~800,000	~1,900,000	~2,100,000
2012	~350,000	~200,000	~1,900,000	~1,300,000

Source: 2012 Census of Agriculture. U.S. Department of Agriculture

Landowners have several considerations that will influence their choices of land use:

What factors are favoring more livestock/crop interaction?

- Income potential of livestock, ability to spread risk
- Added value opportunities, export expansion
- Use of cover crops for soil benefits, potential livestock feed

Growth in deep bedded and pitted cattle feeding barns



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Total Manure Nutrient Value Per Space (Iowa State University Feedlot Manual)

	Volume	Total Value	Hauling Cost	Net per Yr
Open Lot	3 tons	\$35	\$15	\$20
Deep Bed	5 tons	\$76	\$25	\$51
Deep Pit	2500 gal	\$91	\$38	\$53

Swine finishing units

- Add income for farm operation without market risk
- Utilize manure for crop operations
- Different models – deep pit production, hoop barns

Best practices for grazing cornstalks

- Strip graze for higher utilization, graze soon after harvest to get most quality
- Move to fresh stalks, do not graze all winter
- Graze with dry pregnant cows to reduce need for supplementation
- Grazing crop residues with beef cattle (Nebraska)-
<http://www.ianrpubs.unl.edu/live/ec278/build/ec278.pdf>

Grazing or harvesting corn crop residue

- Corn stover underutilized in Iowa
 - 180 bushel corn per acre – 2880 lbs. husks and leaves, available to graze or harvest
- Need cooperation between crop farmer and livestock owner
 - Research shows well managed grazing does not reduce subsequent yield
- Harvesting requires replacing nutrients removed

Potential to graze or harvest cover crops

- Need to balance agronomy and livestock nutrition goals
- Most likely to get yields in spring on late summer/early fall cereal grains
- Insurance, soil, agronomic and livestock interactions with harvest/grazing dates

Iowa producers looking for different cow-calf management systems

- Extended grazing
- Traditional 50/50 hay and graze
- Limited grazing or drylot/confinement
- New Leopold Cow Systems project

New project with Leopold Center -

- Sustainably growing Iowa's beef herds: Evaluating systems that provide economic opportunities while protecting soil and water resources
- Limited grazing, traditional and extended grazing systems
- Using benchmark data, we will analyze the environmental and economic sustainability of each model as well as the risk-bearing ability of each system. They will create case studies of practices for successful operations in each system for educational materials and a production manual for Iowa cow-calf producers.

Cows can graze high quality stockpile



Cows can graze late into the winter



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Combination of stored feed and grazing



Calving and rearing calves inside



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Good environment for cows and calves



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Drylot production – Nebraska research



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Value Added Markets

- Sustainable beef –
 - Different definitions by suppliers - animal handling, feeding and land use keys
- “Never ever 3” – no implant, antibiotics, ionophores – growing markets, export
- High quality and branded programs
 - Increased 400% since 2003, approaching \$4 billion per year (grain fed)

Growing grass fed, organic and direct to consumer markets

- Total of organic, grass fed and natural about 5% of US market
- Demand growing and expanding into traditional wholesale and retail markets
- Need to be sure animal production and premium pay for system

Steenhoek Farms – Duane, Jodi, Sawyer, Sydney and Blair



Northwest corner of Lucas county

- Diversified family farm (by any definition!)
 - 425 cow-calf pairs, split between spring and fall calving cows
 - Finish half of those calves out and buy another 100 steers each year to feed
 - 900 acres of corn, soybeans and oats
 - Nearly 600 acres of hay
 - Custom feed breeding gilts for a family from Minnesota



STEEENHOEK
FARMS

Background

- Duane (Ag Studies) and Jodi (Elementary Education) are graduates of Iowa State University
 - Married 24 years
 - Children Sawyer (20), Sydney (17) and Blair (14)

Rotate pastures, fertilize with manure – nearly double stocking rate



Charolais-cross calves deal with the fescue better



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Facilities

- 40 by 210 deep bedded hoop barn, 50% concrete
- Swine are fed in three nurseries and a tunnel ventilated deep pit finishing barn

Hoop barn – better environment for calves,
catch manure nutrients



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Swine custom feeding – adds income and nutrients



Cattle and swine manure key to success



Built the hog buildings to get the manure to help build the fertility and tilth of the heavy clay soils we have on our farm

- Field where the hog building site is located
 - 20 years ago - 75 bushel corn
 - 2014 - Chopped corn silage – yielded 198 bu/ac grain and 23.5 ton per acres of silage
 - Manure replaced commercial fertilizer and increases production

Productive crop fields



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Swine manure

- Hog finishing building - covered nearly 180 acres of pasture with 2500 gallons per acre.
 - Use a product called More Than Manure to stabilize the nitrogen and phosphorus
 - The manure from the cattle building is also spread on crop ground and pasture

Plant diversity with more rotational acres and saved pastures



Cover crops

- Use cereal grains (rye) on corn silage ground
- Plant annuals on prevented planting acres
- Trying different mixes

Steenhoek Family



Discussion between Jodi, Duane and Joe

- What are biggest challenges you face?
- What is your dream for the future of your farm?
- What technologies will you need to use to stay competitive?
- How do you view the farming opportunities with livestock and crops in the future?

Cow herd is expanding – how do we keep profitable?



What could the impact be of more diversity?

- Decreased soil erosion
- Improved water quality
- Balance risk with more income streams

How do **diversified crop/livestock systems** affect soil erosion and leachable nitrogen at a **landscape scale**?

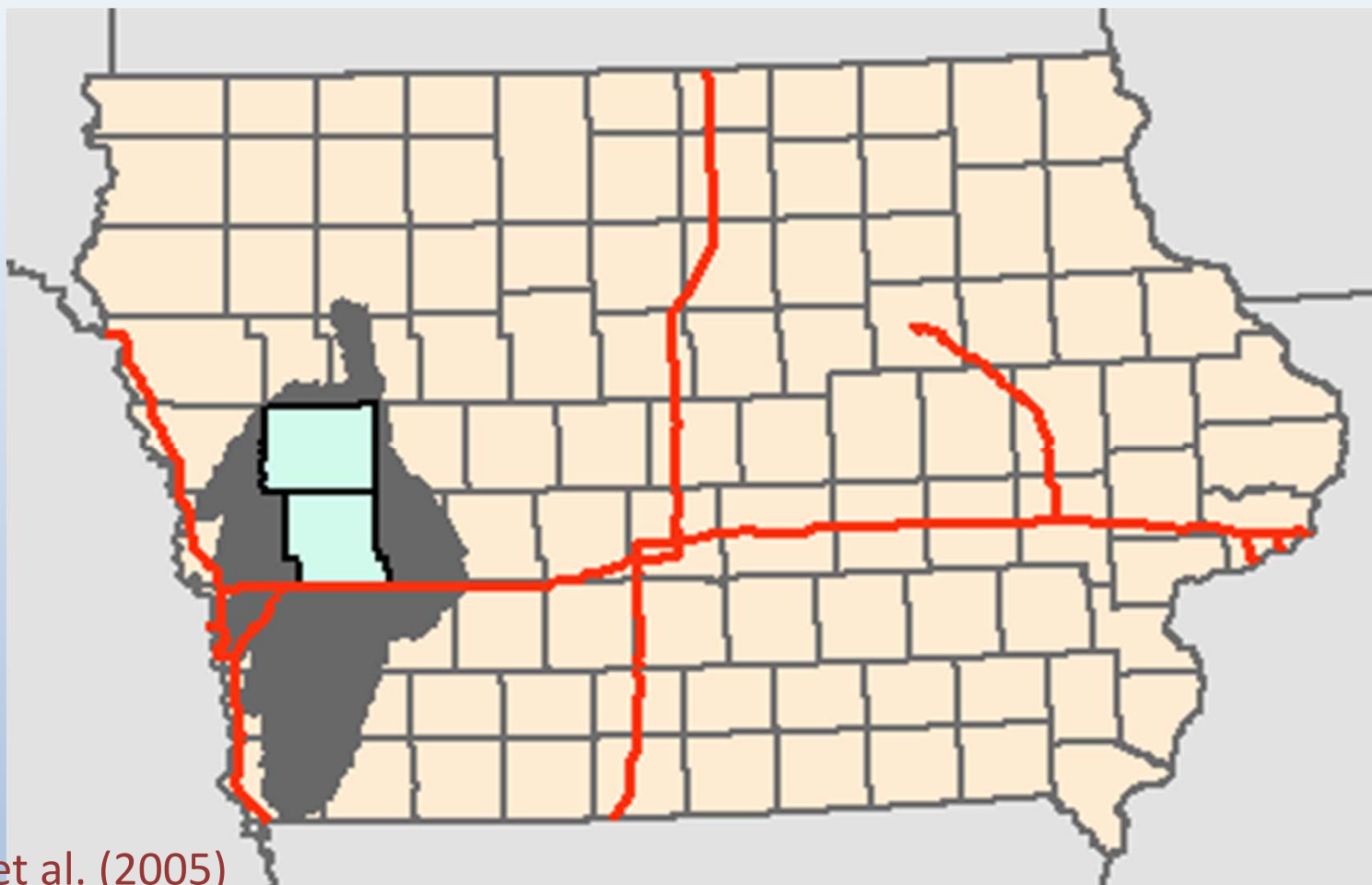


Shelby County, Iowa

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Watersheds with headwaters in Crawford and Shelby Counties, IA



Burkart et al. (2005)

Journal of Geophysical Research-Biogeosciences 110:
G01009, doi:10.1029/2004JG000008

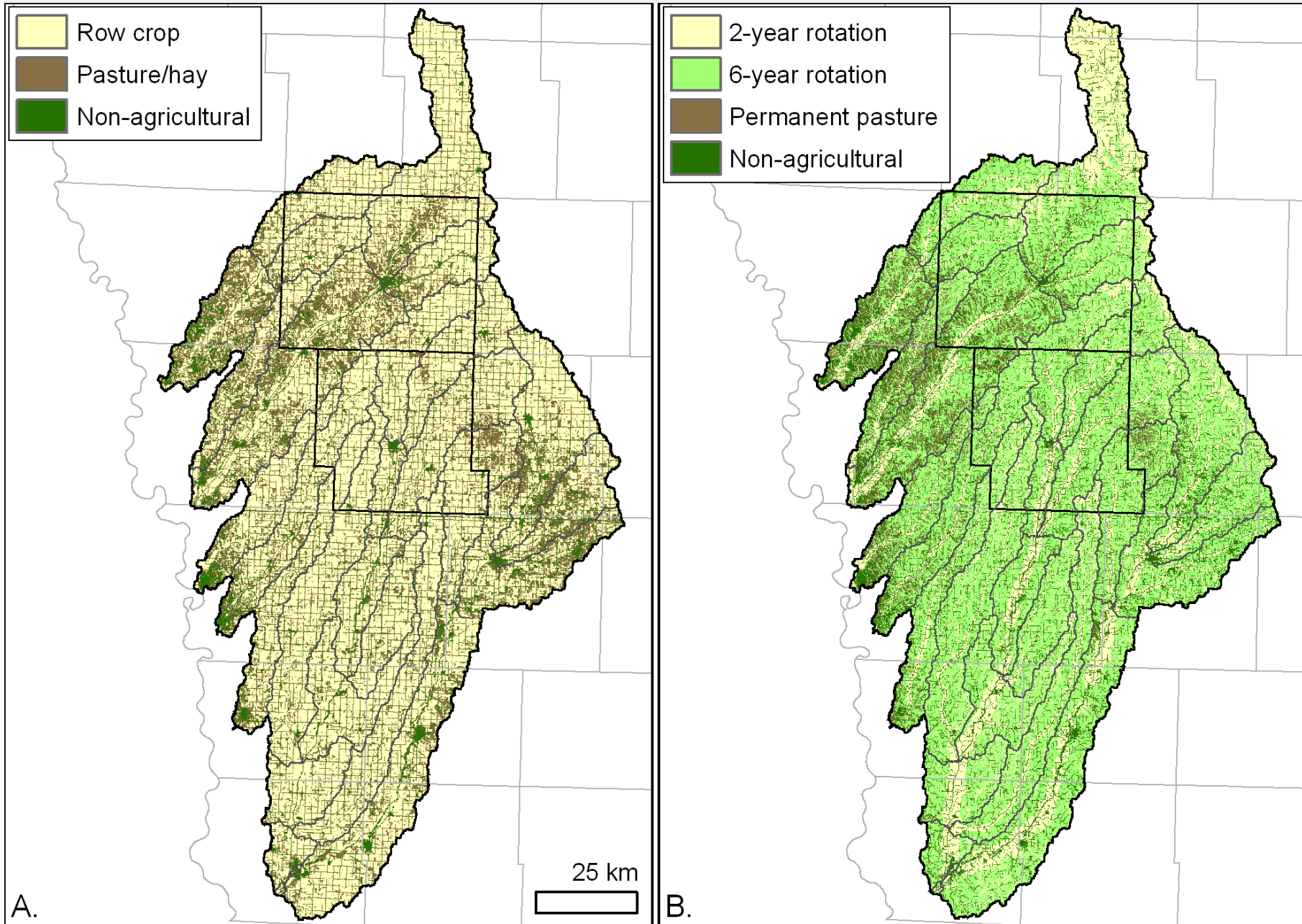
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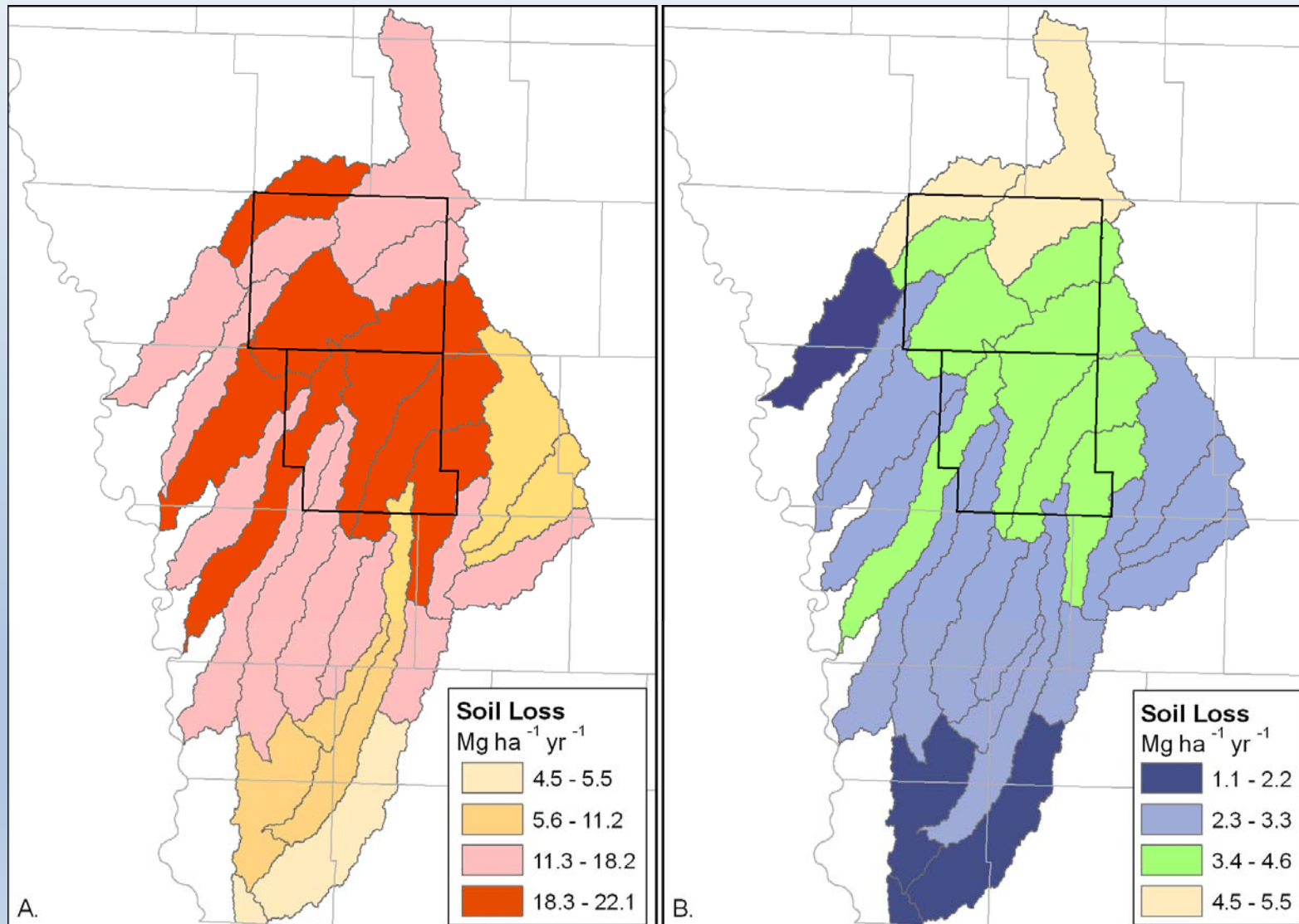
Two scenarios

- **Current conditions** for crops, non-agricultural vegetation, cattle, and hogs
- **Alternative conditions** comprising more land in oat, forages, riparian buffers and eco-reserves; decreased land in corn and soybean; increased cattle (1.5x) and hogs (8x); no synthetic N fertilizer

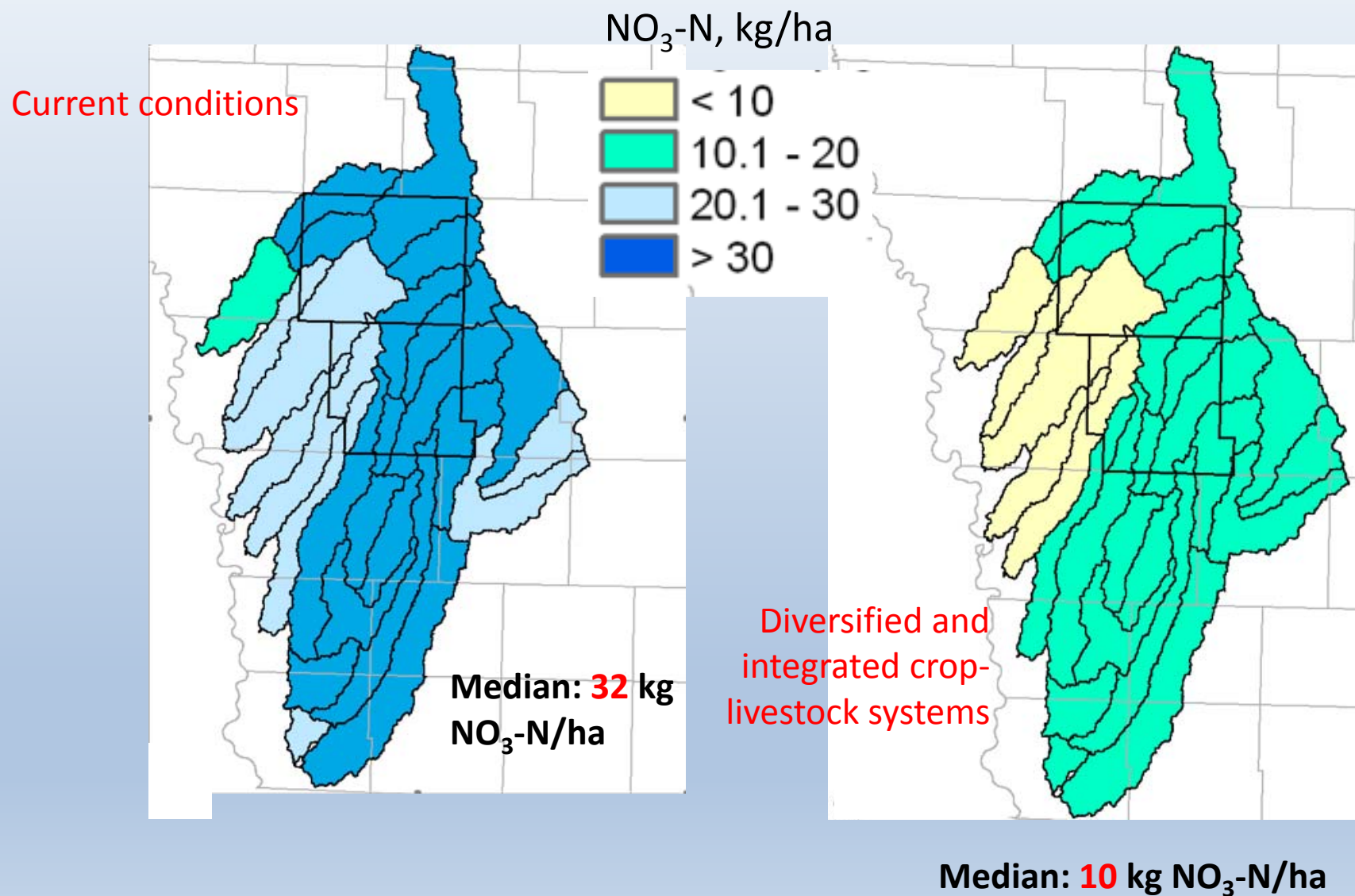
Existing and alternative land use patterns, western Iowa



Predicted soil erosion, via WEPP model,
for current (A) and alternative (B) land uses in western Iowa
("T" $11.3 \text{ Mg ha}^{-1} \text{ yr}^{-1}$)



Predicted leachable soil nitrate-N concentrations for current and alternative land uses in western Iowa



Cow calf systems use forages from marginal soils



Questions???

- Iowa Beef Center
 - iowabeefcenter.org

- Joe Sellers
 - 641-203-1270

 - sellers@iastate.edu

Future Webinars



SCHEDULE
9:00-10:30 AM CDT

TEACHING THE BASICS OF GRAZING
Done!

View the webinar, slides, and resources [here](#).

GRASS-BASED FARM FINANCIALS
Done!

View the webinar, slides, and resources [here](#).

ADAPTIVE HIGH STOCK DENSITY GRAZING
Done!

VIEW THE WEBINAR, SLIDES, AND RESOURCES [HERE](#)

AUGUST 7
Integrating Livestock into Cropping Systems

SEPTEMBER 11
Grazing for Conservation and Soil Health

OCTOBER 9
Teaching Resources Roundtable

All sessions will be online and archived for future use. To sign up for upcoming sessions or to receive reminders about future sessions, you can register with us [here](#).

Are you a grazing specialist, land manager, or grazing educator?

Want to be involved in the development of grazing education?

If so, please [join us in our webinar series](#), hosted by [Green Lands Blue Waters](#) and [The Pasture Project](#).

The monthly series will present topics important to grazing, with perspectives from scientists, experts, and producers.



The webinars are free, and will be designed to encourage an active and lively discussion on issues important to the grazing community.

Look for more information about the series and the next webinar, scheduled for August 7th, at our websites. Contact [Jane Jewett](#) or [Warren King](#) with any questions.

Green Lands Blue Waters





Thank you!