The Challenges of Sustainable Agriculture in the Corn Belt

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Leopold Center for Sustainable Agriculture
The Leopold Center for Sustainable Agriculture
Established by the Iowa General Assembly as part of the Iowa Groundwater Protection Act (GWPA) of 1987
Aldo Leopold 1887-1948

- Burlington native
- Yale: Forestry
- National Forest Service
- Game Management
- University of Wisconsin
- A Founder of the Environmental Movement
LC Mandated Mission

• Identify and research the negative impacts of today’s agriculture

• Identify and research alternatives for agriculture

• Develop a plan to deliver information in cooperation with ISU Extension
A Forum for Sustainability in Agriculture, Farming and Food

Asking “What if” Questions.

A Place to ask Uncomfortable Questions.

Discussions and Debate on Sustainability.
Many Issues and Topics

- Climate
- Environment
- Land Use
- Soil, water, habitat
- Animal welfare
- Transparency
- Labeling
- Co-existence
- Confinement

- Antibiotics
- Slaughter and death
- Industrialization
- Diet and health
- Local food
- Wealth and inequality
- Market power
- Trade
- Exports
Iowa Agriculture Receipts

- Corn $13.5 billion
- Soybean $5.9 billion
- Cattle $3.8 billion
- Hogs $7.0 billion
- Eggs $0.9 billion
- 20% of Iowa GSP
- 2014 IA farm total $31 billion; PA $7.6 billion
Iowa’s Pentagon
Some U.S. numbers, May 2015

• Place 171 million broiler chicks per week
• Slaughter 158 million chickens per week
• Slaughter 566,000 feedlot cattle per week
• Slaughter 2,147,000 hogs per week
• Produce 40.2 million gal. ethanol per day
Production Intensity in Agriculture
Capital and Technology Intensive
Recognizing Our Food Dependency
How is our food produced?

Speed at which it is produced?
(At what scale?)

How do we want it produced?
Example: Egg Production
Intensified Farming has Consequences
SIMPLIFICATION and HOMOGENEITY of LANDSCAPES

Corn and soybean in Iowa: 63% of total land area, 82% of cropland

Wright County, 2011
583 sq. miles
(1,509 sq. km.)

Yellow = corn
Green = soybean

USDA-NASS Cropland Data Layer
Iowa, 2008: Soil loss exceeded 20 tons per acre on 2.3 million acres.

Photo: USDA-NRCS
An Appreciation of Topsoil or Taking it for Granted?
Elusive Nature of Soil Erosion
It takes hundreds to thousands of years to form an inch of topsoil.

An acre of soil 1” deep weighs about 167 tons. Loss of 20 tons/acre might represent the loss of 100 years of soil formation.
Euro-American settlers in Iowa found a fertile, biological diverse environment.
Soil Organic Matter Trends
Farmland Reconstruction
Farming land that used to be grassland
Farming on the Square
Row Crop Farming 1937
Moving the Hillside: 1 inch at a time
Ruminants (cattle) can be an exception in terms of land use.
Many benefits of grazing

- Control soil erosion
- Improve water quality
- Increase soil organic matter
- Sequester carbon
- Multiple land use
- Habitat
- Wildlife
- Management matters!
Recent Books

COWS SAVE THE PLANET
AND OTHER IMPROBABLE WAYS OF RESTORING SOIL TO HEAL THE EARTH

UNMAKING THE DESERTS, RETHINKING CLIMATE CHANGE, BRINGING BACK BIODIVERSITY, AND RESTORING NUTRIENTS TO OUR FOOD

JUDITH D. SCHWARTZ
FOREWORD BY GRETEL EHRLICH

DEFENDING BEEF
THE CASE FOR SUSTAINABLE MEAT PRODUCTION
THE MANIFESTO OF AN ENVIRONMENTAL LAWYER AND VEGETARIAN TURNED CATTLE RANCHER

NICOLETTE HAHN NIMAN
U.S. Beef Production

70 % grass & forage
Climate destabilization and erratic weather
Iowa Water Quality Issues

Figure 4. Raccoon River Average Nitrate Concentration 1974-2013

milligrams per liter as Nitrogen

Valuation of Ag Externalities

Who pays and how much?
A Matter of Restoring and Maintaining Balance
Creating Change is a Challenge

• Lack knowledge of the problems or solutions.
• Believe they are already doing a good job.
• Dismiss the extent of the problem so no need to act.
• Follow economic incentives in the marketplace regardless of impact.
• Do what is known, familiar and comfortable. Do what is easy/simple.
• Independent-minded. Skeptical of distant experts or critics.
• Private ownership, private decisions.
• Follow agribusiness opinion leaders, who reinforce personal beliefs and do not follow academia.
• Lack a sustainability/ecological perspective.
• Consider personal actions taken to be insignificant to solve the problem.
• Risk averse, have seen other farms fail/lost and see change as risky.
• Near retirement and have no desire to change in last remaining years.
Our Biological Co-Existence on Planet Earth
Our Choice Our Vote

Each purchase is a vote which the market responds to.

Learning the facts to make a wise choice.

The decision is ours to make with every purchase.
Thanks for Listening

*The Cornell Farm*, oil on canvas by Edward Hicks, 1848. National Gallery of Art, Washington, D.C.