Soil Health and Continuous Improvement of Soil Resources

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Three Points

• Agriculture has been the beneficiary of continuous improvement in production, technology, and resource utilization
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• 100+ years of cultivation and grazing has had an impact on our soil resources
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• There is an opportunity/responsibility to seek a path forward to protect and restore our soil resources
Resources Basic to Food and Commodity Production

- Human Resources
- Seed - Plant Genetics
- Fertility
- Crop Protection Products
- Equipment
- Soil Resources
Human Resources

- University Education
- University research through Extension
- Web access to specialized information
- Conferences - production/conservation
- Journals and Publications
- Certified Crop Advisors
Seed - Plant Genetics

- Plant genome mapping
- Plant breeding, GMOs
- Testing/certification
  - Germination
  - Yield
- Field days
Fertility

- Soil testing
- Nutrient management planning
- Four Rs, nutrient management
  - Source
  - Rate
  - Timing
  - Placement
- Manure utilization
Crop Protection Products

• Pesticides
  – GMOs
  – Modes of Action
  – Scouting and IPM services
  – Product Labels
    • Effective
    • Safety
    • Environmental protection
Equipment
Equipment
We can’t make the same claim that over the last 10, 20, 50, 150 years - that we can see improvement in our soil resources.
Soil Resources

- Soil mapping and digitization of soil surveys
- Soil erosion control programs, practices and systems - TA/FA
Clarion Soil
Loamy Wisconsin Glacial Till

A1: 7-12 inches
very dark brown loam

A2: 12-18 inches
dark brown loam

Bw1: 18-26 inches
dark yellowish brown loam

Bw2: 26-36 inches
dark yellowish brown loam
Clarion Soil
Clarion Soil Resource

- We map ‘erosion phases’
- Color changes – reduced soil carbon
- Soil accumulation – down gradient
- Tolerable soil loss
Soil Conservation/Soil Health

• Conservation practices have resulted in an important measure of protection

• Concept of soil health suggests a system approach to erosion control, and the opportunity to restore or enhance soil properties
Soil Health Concept - Cover Crops

• Prevent erosion – as a part of a conservation plan
  – Keep it green
  – Maintain more residue following harvest, through planting
  – Mimic the native vegetation

• Without taking our cropland out of production
Cover Crops

• Restore soil properties - roots
  – Build soil organic matter
  – Improve soil structure
    • Permeability
    • Moisture holding capacity
    • Reduce compaction
    • Enhance soil biology

• Increase soil/crop resilience
Cover Crop Cropping System

• Not without challenges
  – Weather limitations
  – Labor/equipment
  – Support services
    • Growing agribusiness products/services
  – Learning curve
    • Field days
    • Farmer to farmer
  – Cost/economics
Continuous Improvement

To meet future demands for food, fuel, fiber, and forage – we need to protect restore our nation’s soils

We have to increase our commitment to manage our soil resource as if it is the most important crop production asset we have