Farmers Building Soil Health And Protecting Water Quality In Minnesota

Karen Scanlon, Conservation Technology Information Center

Dave Legvold, Legvold Farms

June 3, 2015

MINNESOTA
LAND • LAKES • LEGACY
CTIC champions, promotes and provides information on technologies and sustainable agricultural systems that conserve and enhance soil, water, air and wildlife resources and are productive and profitable.
A Public/Private Partnership

Members
• Corporations, Institutions (media, commodity groups, conservation organizations, associations), Individuals

Advisors & Partners
• Federal agencies, universities, extension, research institutions
What We Do

Connect

Inform

Champion
CONSERVATION IN ACTION TOURS

Annual tour showcasing innovative, successful conservation farmers

2008 – Indiana
2009 – Illinois
2010 – Virginia
2011 – Ohio
2012 – Mississippi Delta
2013 – Indian Creek watershed, Illinois
2014 – Everglades Agricultural Area, Florida

www.ctic.org/CIATours/
Today's Cover Crops
managing for future productivity

- Radish
- Cereal rye
- Hard rye
- Annual ryegrass
- Crimson clover
- Mauve clover
- Spring oats
- Turkeytail

- Promotes fertility, weed control
- Prevents wind and water erosion
- Improves soil structure
- Reduces soil erosion
- Provides a food source for wildlife

- Hans
MINNESOTA
LAND • LAKES • LEGACY

CONSERVATION IN ACTION TOUR
August 11 – 12, 2015
David Legvold
Legvold Farms
Northfield, MN
Masking the loss of quality soil?

- Better genetics
- Fertilizer efficiency
- New ways to control weeds
- Insect & disease resistance
Better soils...HOW?
Well drained soil, add drain tile if needed

Reduced tillage

Greater water holding capacity

HEALTHY SOILS

Increased organic matter

Increased nutrient cycling

More biological life

Aggregate stability

Increased soil porosity
Fields in Various Stages of Strip-Tillage

1. Conservation Tillage
2. Nitrogen Management
3. Cover Crops
Soil Warrior with dry fertilizer system  $84,354
Trimble Auto Steer with cellular correction  $20,322
Drainage Water Management
Drainage Water Management
Drainage Water Management
Drainage Water Management

Conventional Drainage
- Water table lowers to level of tile

Controlled Drainage
- You can raise or lower the water table by adding or subtracting gates
Drainage Water Management

Seasonal Schedule

Winter

Spring

Summer

Fall
Drainage Water Management Benefits

Potential to regulate rate of water loss from field:

- Maintain adequate water supply for the crop
- Keep nutrient in root zone
- Increase denitrification
- Increase groundwater recharge
- Create/improve wildlife habitat
- Reduce nutrient loss to downstream water systems
- Reduce flooding downstream
Saturated Buffers

Top View

Stream

Outlet

Perforated laterals extending on both sides of main

Non-Perf Tile Main

Water Level Control Structure
Saturated Buffers

Graphics courtesy of Agri Drain Corporation
Saturated Buffers

High potential to reduce nitrate concentration and load by
- direct uptake by the vegetation in the buffer,
- converting nitrate-nitrogen into harmless nitrogen gas and
- reducing drain flow to stream.
Where do we go from where we are now?

1. Try one thing each year. Seek experience.
   (Tillage, Nutrient management, Drainage, Varieties)

2. “Prove all things, hold fast that which is good”
   I Thess. 5.21

3. Move toward better soils with less tillage.
   (It takes patience—perhaps 5 years to notice a difference)

4. Make the most of your “40 chances”.
August 11, 2015
Tour Social

Cocktails, appetizers and conversation with fellow tour participants, tour hosts, sponsors and partners

5:30 - 7:30 pm
August 12, 2015
Hmong American Farmers Association in Hastings, MN

- A model farm showcasing families growing food for other families

- Integrating nutrient management, pollinator plantings, cover crops, soil health and pest control into complex crop rotations
MINNESOTA
LAND • LAKES • LEGACY

CONSERVATION IN ACTION TOUR
August 11 – 12, 2015

Far-Gaze Farm
in Northfield, MN

- Better soil with reduced disturbance, cover crops and soil testing

- Working with ag retailers on nutrient management and manure management programs
Maring Farm in Kenyon, MN

- Rotational grazing and watering system
- Pollinators in an agricultural landscape
Burfeind Dairy
in Goodhue, MN

- Modern facility and the partnerships involved
- Manure management and storage
MINNESOTA
LAND • LAKES • LEGACY

CONSERVATION IN ACTION TOUR
August 11 – 12, 2015

St James Hotel
in Red Wing, MN
THANK YOU

Karen Scanlon, Conservation Technology Information Center
Scanlon@ctic.org

Dave Legvold, Legvold Farms
Legvold@stolaf.edu