



# DOUGLAS COUNTY CONSERVATION DISTRICT



## *KDHE Clean Water Neighbor Grant Final Report*

### *OUR MISSION*

*To provide leadership and assistance in promoting individual responsibility  
for the conservation of Douglas County Natural Resources.*



## Douglas County Conservation District

*Clean Water, Healthy Lands, Bright Future*

# Cover Crop Field Day

**October 8, 2009**

**5:30 to 7:30 PM**

Mark and Brenna Wulfsuhle  
Farm Headquarters  
198 N 1250 Rd Berryton

Registration is free, but please RSVP by  
10/05/2009 to:  
Jim Weaver, Program Coordinator DCCD

### Highlights

Benefits of Cover Crops

Soil Health

Erosion Control

Wildlife

Cover Crop Grant Overview

Field Visit of Established Plots  
of radishes, turnips, canola, and  
Ethiopian Cabbage!!



The Douglas County Conservation District has received grant funding from the Kansas Department of Health and Environment EPA Clean Water Funds to conduct a demonstration project evaluating the effects of cover crops on farmland in Douglas County. Several plots across the county will be planted to various covers, and testing will be done on the fields to determine any changes. Join us for a short program explaining the benefits of cover crops and the grant demonstration project. Refreshments will be provided!

# Seed Mixture in Drill Seed Box



# Control Plot in Wheat Fallow



# Typical Seed Mix Ticket



# Nitro Max on Plot 1 Weed Suppression



# Nitrogen Nodulation



# Compacted Layer Deformity



# Radish Compaction Reduction Potential



# Turnip Forage, Compaction Reduction, Weed Suppression





# Early Growth Stage



# Five Weeks Growth



# Mid Summer Grazing Brassica Mix Exclusion Cage



# Forage Plot Results

## Grazing Brassica Mix

- Standard Range Clipping frame done on 12/21/2009 from inside Exclusion cage. Dried for two weeks.
- 54gm Actual Clipped Wt. Dry
- Yield was 2700# or 1.35 Ton/Acre
- Cost to produce was \$30.75 per acre
- By dividing Total Cost per acre by the Tons produced means the cost was \$22.77 per Ton

# Mid Summer Shotgun Grazing Mix Exclusion Cage



# Forage Plot Results

## Shotgun Grazing Mix

- Standard Range Clipping frame done on 12/21/2009 from inside Exclusion cage. Dried for two weeks.
- 151gm Actual Clipped Wt Dry
- 6500# or 3.28 Ton/Acre
  
- Cost to produce was \$42.25 per acre
  
- By dividing Total Cost per acre by the Tons produced means the cost was \$17.15 per Ton

# Brome Hay Costs

The USDA - Kansas Department of Agriculture Market News on December 29, 2009 listed the price of Large Round Bales of Brome Hay in Northeast Kansas as

**\$50 - \$60 per Ton**

# Conservation District Great Plains Drill



# February Residue



# Clover Broadcast in Standing Corn



# Rye/Vetch Drilled in Soybean residue



# Nitro Mix Drilled into Wheat Residue Control on Right



# Rye/Vetch Drilled into Corn Residue



# Annual Rye Drilled after Beans for Forage



# Rye Mid Summer



# Keith Burns, Green Cover Seed Demonstrating Root Development



# Cover Crop Decision Making Chart

<http://plantcovercrops.com>

<http://plantcovercrops.com>

## Previous Crop: Cereal Crops

### Nitrogen Scavengers

Oilseed Radish (plant mid-August)  
Oats  
Turnips (plant mid-August)  
Rape  
Oats/Oilseed Radish Mixture  
Winter Rye (plant mid-August and later)  
Annual or Italian Ryegrass (plant mid-August)

### Nitrogen Producers

Crimson Clover  
Austrian Winter Peas  
Forage Peas  
Cowpeas  
Berseem Clover  
Hairy Vetch

### Both Nitrogen Producers and Scavengers

Crimson Clover/Oilseed Radish Mixture (plant mid-August)  
Austrian Winter Pea/Oilseed Radish Mixture (plant mid-August)  
Annual Ryegrass/Oilseed Radish/Crimson Clover Mix

### Frost seeded into cereal crop

60/40 Plowdown  
80/20 Plowdown  
Mammoth Red Clover  
Medium Red Clover  
Alsike Clover  
Yellow Blossom Sweet Clover  
White Clover

### Cover Crop for forage

Sudangrass (dry hay, haylage, or graze)  
Sorghum-Sudangrass (haylage or graze)  
Teffgrass (dry hay, haylage, graze)  
Oats and Oilseed Radish (graze)  
Oats and Turnips (graze)  
Oats (dry hay, haylage, graze)  
Annual Ryegrass (haylage, graze)  
Oats/Cereal Rye/Turnips Mixture (graze)  
Pearl Millet (dry hay, haylage, graze)

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# Cover Crop Decision Making Chart

<http://plantcovercrops.com>

<http://plantcovercrops.com>

Previous Crop: **Corn/Corn Silage**

## Nitrogen Scavengers

Annual Ryegrass<sup>3</sup> (A / D)  
Oilseed Radish<sup>1</sup> (A / D)  
Turnips<sup>2</sup> (A / D)  
Winter Rye<sup>3</sup> (A / D)  
Winter Barley<sup>3</sup> (A / D)  
Winter Triticale<sup>3</sup> (A / D)  
Triticale/Italian Ryegrass<sup>3</sup> Mix (A / D)

## Nitrogen Producers

Crimson Clover<sup>3</sup> (A / D)  
Austrian Winter Peas<sup>2</sup> (D)  
Hairy Vetch<sup>3</sup> (A / D)

## Both Nitrogen Producers and Scavengers

Crimson Clover/Oilseed Radish Mixture<sup>3</sup> (A / D)  
Austrian Winter Pea/Oilseed Radish Mixture<sup>2</sup> (D)  
Ann. Ryegrass/Oilseed Radish/Crimson Clover Mix<sup>3</sup>(A / D)

Guidelines for success when aerial applying cover crops into standing corn:

- ⇒ Aerial apply cover crops when the corn plant is dried approximately to the ear.
- ⇒ Aerial apply cover crops when approximately 50% of the sunlight can reach the ground between the rows. (Walk in the field a few rows to determine this.)
- ⇒ For success, do not fly cover crops into corn that is immature (still very green). The seeds will most likely germinate and then mold (not enough sunlight to conduct photosynthesis and too moist of conditions).
- ⇒ Rule of thumb...don't plant in the shade.

## Cover Crop for forage

Oats/Rye/Turnip Mix<sup>3</sup> (A / D)(graze)  
Oats and Oilseed Radish<sup>1</sup> (A / D)  
Oats and Turnips<sup>1</sup> (A / D)  
Oats<sup>1</sup> (A / D)  
Annual Ryegrass<sup>3</sup> (haylage, grazing) (A / D)  
Triticale/Italian Ryegrass Mix<sup>3</sup> (A / D)

This chart and photo are property of plantcovercrops.com and have been reproduced and edited with permission.

<sup>1</sup> = expect winterkill

<sup>2</sup> = may overwinter

<sup>3</sup> = expect to live over-winter

A=Aerial Application is dependable for stand establishment

D = Drilled is dependable for stand establishment

A / D = Aerial and/or Drilled is dependable for stand establishment

# Cover Crop Decision Making Chart

## Previous Crop: Soybeans

### Nitrogen Scavengers

Annual Ryegrass<sup>3</sup> (A / D)  
Oats and Oilseed Radish<sup>1</sup> (A / D)  
Oats and Turnips<sup>2</sup> (A / D)  
Winter Rye<sup>3</sup> (A / D)  
Winter Barley<sup>3</sup> (A / D)  
Winter Triticale<sup>3</sup> (A / D)

### Nitrogen Producers

Crimson Clover<sup>3</sup> (A / D)  
Hairy Vetch<sup>3</sup> (A / D)

### Both Nitrogen Producers and Scavengers

Annual Ryegrass/Crimson Clover/Radish Mix<sup>3</sup> (A / D)  
Crimson Clover/Radish Mixture<sup>3</sup> (A / D)

Guidelines for success when aerial applying cover crops into standing soybeans:

- ⇒ Start aerial application of cover crops when the soybean plant is showing 25-50% yellowing of leaves.
- ⇒ Aerial apply cover crops when approximately 40-50% of the sunlight can reach the ground between the rows. (Walk in the field a few rows to determine this.)
- ⇒ For success, do not fly cover crops into soybeans that are immature (still very green). The seeds will most likely germinate and then mold (not enough sunlight to conduct photosynthesis and too moist of conditions).
- ⇒ Rule of thumb... don't plant in the full shade.

### Cover Crop for forage

Oats/Rye/Turnip Mixture<sup>3</sup> (A / D) -(graze)  
Triticale/Italian Ryegrass Mix<sup>3</sup> (A / D)  
Oats and Turnips<sup>1</sup> (A / D)  
Oats and Oilseed Radish<sup>1</sup> (A / D)  
Oats<sup>1</sup> (A / D)  
Annual Ryegrass<sup>3</sup> (haylage, grazing) (A / D)

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A=Aerial Application is dependable for stand establishment

D = Drilled is dependable for stand establishment

A / D = Aerial and/or Drilled is dependable for stand establishment

## Aerial Applying Cover Crops into corn – When is the right time?

A few years back many said “August 15-25” was the right date to aerial seed cover crops into corn. However, we found out very quickly that “dates” cannot be set...but *timing* can be. While we know that August 15-25 can often be correct, we also know that following the calendar can be a mistake. So let’s set a few guidelines that should help all of us have better success when aerial applying cover crops into standing corn.

### Guidelines for success when aerial applying cover crops into standing corn:

- ⇒ Aerial apply cover crops when the corn plant is dried approximately to the ear.
- ⇒ Aerial apply cover crops when approximately 50% of the sunlight can reach the ground between the rows. (Walk in the field a few rows to determine this.)
- ⇒ For success, do not fly cover crops into corn that is immature (still very green). The seeds will most likely germinate and then mold (not enough sunlight to conduct photosynthesis and too moist of conditions).



The field condition above is ideal for aerial application of cover crops.



Corn should be maturing up to the ear before aerial applying cover crops.

### When is it too late to aerial apply cover crop seed into standing corn?

- ◆ You need 5-6 weeks of growing time for cover crops going into the winter for best winterhardness and performance.
- ◆ Winter Cereal Rye is more “flexible” than annual ryegrass or other cover crops when it comes to the lateness of application.
- ◆ If corn will be harvested soon after an aerial application can be made, consider the cost of other types of cover crop applications (i.e. drilling the cover crop in after harvest). Utilize the lesser expensive application.

[www.plantcovercrops.com](http://www.plantcovercrops.com)

# Douglas County Conservation District

## COVER CROP FIELD DAY 2013 "A PRESCRIPTION FOR SOIL HEALTH"

MIKE & CHERYL FLORY'S FARM - MAP PROVIDED UPON REGISTRATION

TUESDAY, OCTOBER 29, 2013 8:00 AM – 4:30 PM

### AGENDA

- 8:00-8:30 Registration  
Coffee and Donuts
- 8:30-8:35 Welcome  
Mike Flory, DCCD Chair
- 8:35-8:50 Field Day Overview  
Jim Weaver
- 9:00-10:00 What Does Soil Health Mean to You in Dollars and Sense?  
Gail Fuller
- 10:00-10:15 Break
- 10:15-11:15 Building Better Soils  
David Brandt
- 11:15-12:00 Soils, Infiltration Tests, Programs  
NRCS Soil Health Team
- 12:00-1:15 Lunch, Vendors and Demonstrations
- [Please RSVP for an email by October 18](#)
- 1:25-2:25 Soil Pit: A Peek Beneath the Plants  
ESU, Dr. DeAnn Presley
- 2:25-3:25 Demo Plots: Species, Timing, Goals  
Keith Burris
- 3:25-3:50 How Can You Manage if You Don't Measure  
NRCS, Sara Fredrickson
- 4:30-4:40 Producer Panel Q & A  
David Brandt, Gail Fuller,  
Bo Kilgough, Daniel Squares,  
Mark Wulfkuhn
- 4:30 Wrap Up  
Self-Guided tour at Clinton Lake  
COE Farms (maps available for those interested)

This event is free and open to interested landowners and operators. Space is limited to the first 200 participants. Call our office to register 785.843.4210 ext. 3

### SPEAKERS



#### David Brandt

Ohio farmer David Brandt switched to no-till in 1971 and started experimenting with cover crops in 1979.

#### Gail Fuller

Eastern Kansas farmer Gail Fuller practices no-till crop farming and cattle grazing. Gail has practical experience with over 70 cover species.



#### Dr. DeAnn Presley

DeAnn is a 6-State professor that specializes in environmental soil science. She is the Generation Specialist for Environmental Soil Science and Management.

### DEMONSTRATIONS



Field Presentations at  
Do Kilgough's Farm



RAINFALL SIMULATOR  
(OVER LUNCH)



AERIAL SEEDER  
(OVER LUNCH)



SOIL TUNNEL TRAILER  
(ALL DAY)

### Cooperating Agencies and Sponsors



# NRCS Soil Health Team



# Soil Pit with DeAnn Presley KSU



# Gail Fuller Presenting

