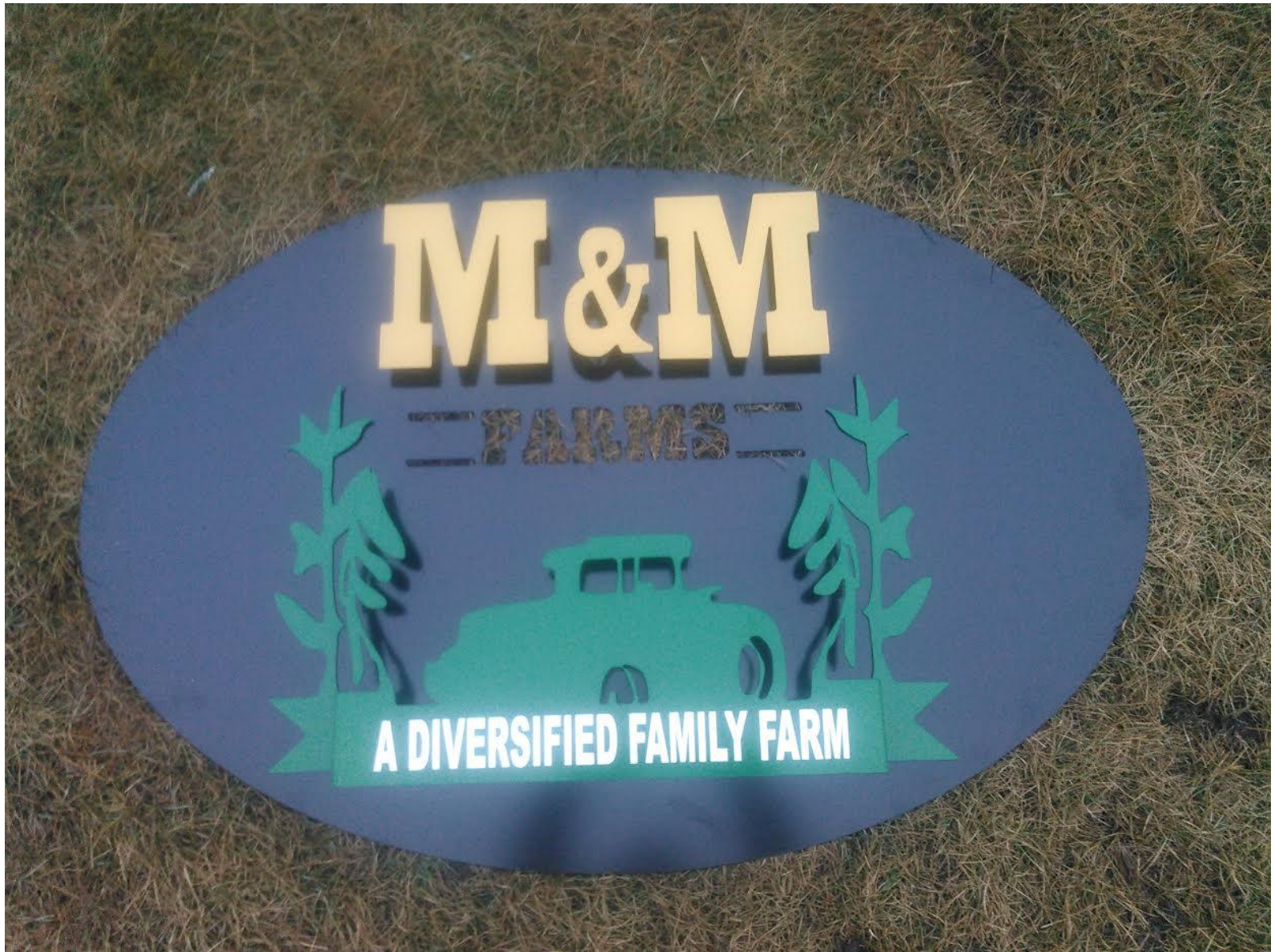
Grazing Cover Crops



Mark Schleisman

Truly a Family Operation

Operation History

- Grew our first crop in 1986
  - Had it custom farmed
- Bought 80 sows in 1998
  - Had them custom fed
- In 2010 quit my full time job to farm full time.
  - Purchased livestock and machinery from my Father and Uncles
  - Custom farmed their land
  - Son and Son-in-law came home to farm with me.
  - Father and Uncles continue to help with seasonal demands
- Started with 70 acres of grazed cover crop in 2010
- Currently incorporate 1200 acres of cover crops in our operation
  - Graze 80% of them

A Diversified Operation

- 4500 acres in our operation
  - Popcorn
  - Hybrid Popcorn Seed Production
  - Soybeans
  - Soybean Seed Production
  - Fieldcorn
  - Fieldcorn Seed Production
  - Hay and other forages
  - Rye/Triticale seed for cover crops
- Custom Farming and Cover Crop Seeding
- 580 sows Farrow to Finish
  - 13,000 owned hogs marketed annually
- 15,000 custom fed hogs marketed per year (nursery to finish)
- 360 cow calf pairs
  - Background raised calves

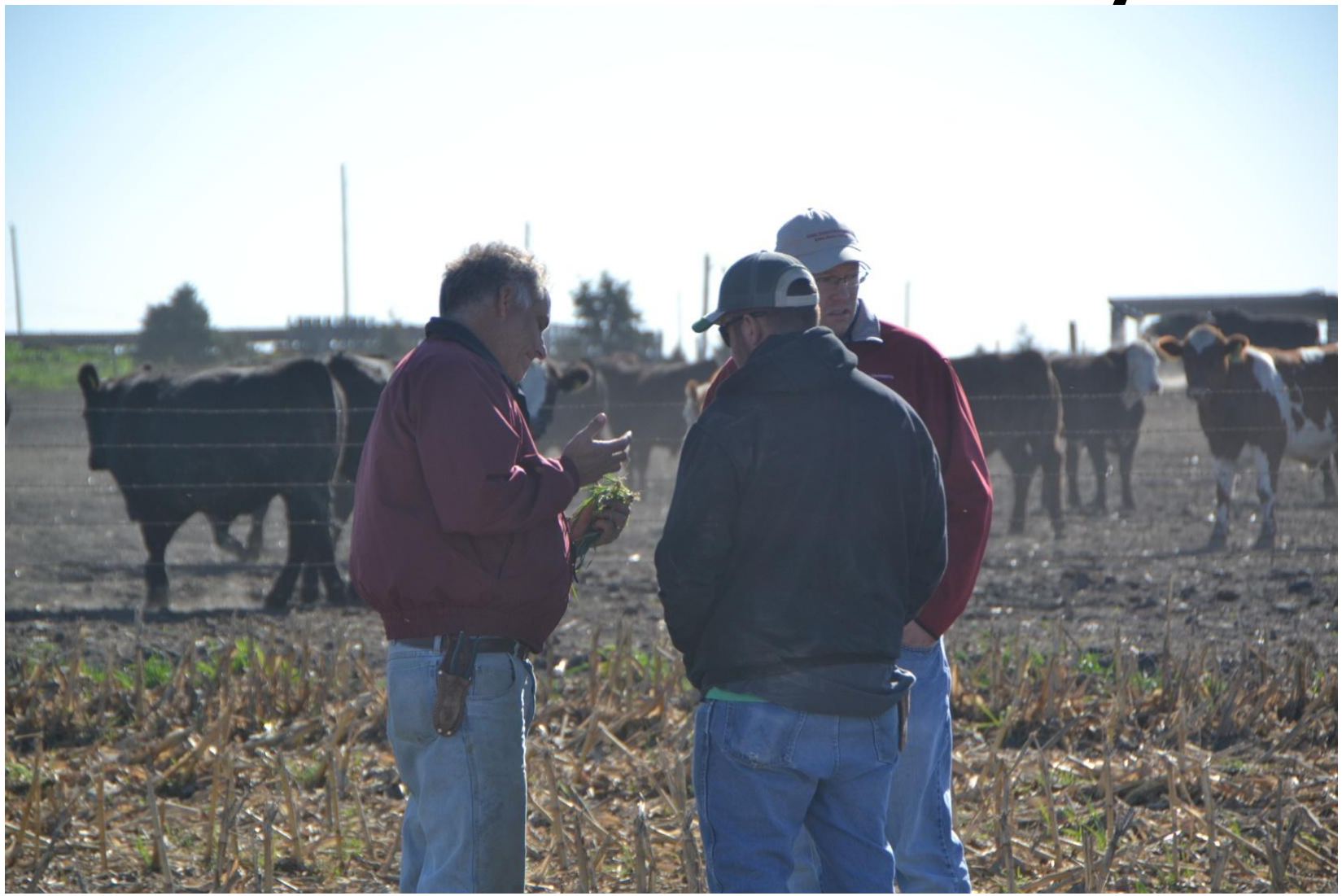
Develop a Plan Early

		Cereal Rye			Triticale			Jackhammer Radish			Purple Top Turnips			Dwarf Essex Rape			Berseem Clover			Brown Mustard		
Field Name	Acres	lbs/a	tl lbs	cost/a	lbs/a	tl lbs	cost/a	lbs/a	tl lbs	cost/a	lbs/a	tl lbs	cost/a	lbs/a	tl lbs	cost/a	lbs/a	tl lbs	cost/a	lbs/a	tl lbs	cost/a
Sorenson's North	155	50	7,750		50	7,750		2	310		0	-		2	310		0	-		0	-	
Macke's	72.9	50	3,645		50	3,645		2	146		0	-		2	146		0	-		0	-	
Larry's South	88	50	4,400		50	4,400		2	176		0	-		2	176		0	-		0	-	
Larry's North	160	50	8,000		50	8,000		2	320		0	-		2	320		0	-		0	-	
Gillespie's/Garwood's	228.88	50	11,444		50	11,444		2	458		0	-		2	458		0	-		0	-	
Gillespie's Dryland	19.88	0	-		100	1,988		3	60		0	-		0	-		0	-		0	-	
Jerry's	71.6	50	3,580		50	3,580		0	-		0	-		2	143		0	-		0	-	
Melwood South	160	30	4,800		30	4,800		2	320		0	-		2	320		0	-		0	-	
Smith	240	30	7,200		30	7,200		2	480		0	-		2	480		0	-		0	-	
Total	1,196		50,819			52,807			2,269			-			2,353			-			-	

Check Planned Herbicide Labels for Grazing Restrictions

Cover Crops Use of cover crops as a means of soil improvement, erosion control, weed and/or insect suppression, etc., following harvest of corn in the Fall is increasing. Planting of cover crops in fields treated with LAUDIS Herbicide is **allowed as long as these cover crops are not grazed by livestock nor harvested** for food. Cover crops are to be tilled under or chemically controlled with burndown herbicides in the spring. Many cover crops can be planted within 90-120 days after application of LAUDIS Herbicide. However, all potential cover crops have not been evaluated for tolerance to LAUDIS Herbicide and significant injury may occur. Prior to seeding a cover crop, complete a successful field/small scale bioassay to provide an indication of the level of tolerance to the prior LAUDIS Herbicide application. Refer to the “Field/Small Scale Bioassay” section. If used in tank mixtures with other herbicides, always follow the most restrictive label.

Discussing potential Herbicide injury to fall seeded cereal rye



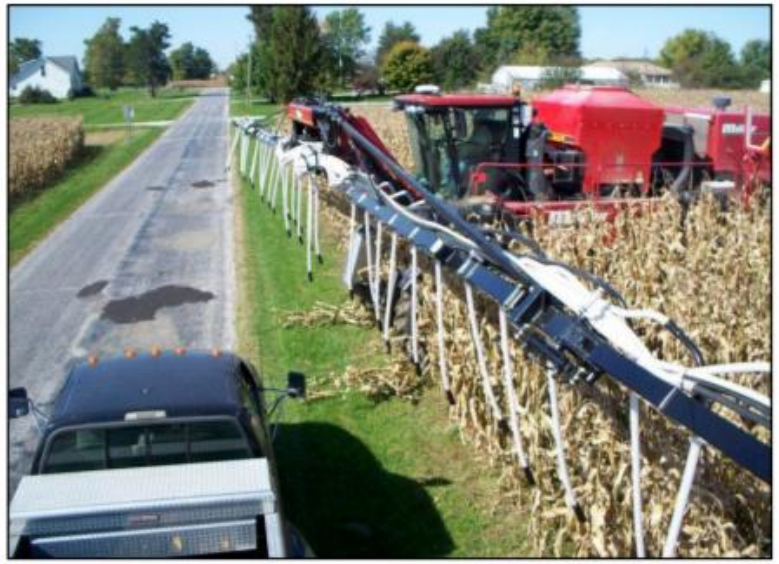
Review Rotational Restrictions Before Seeding

Table 1. Relative tolerance of several cover crop species to herbicides commonly used in corn and soybean production. Injury potential ratings are based on greenhouse trial.

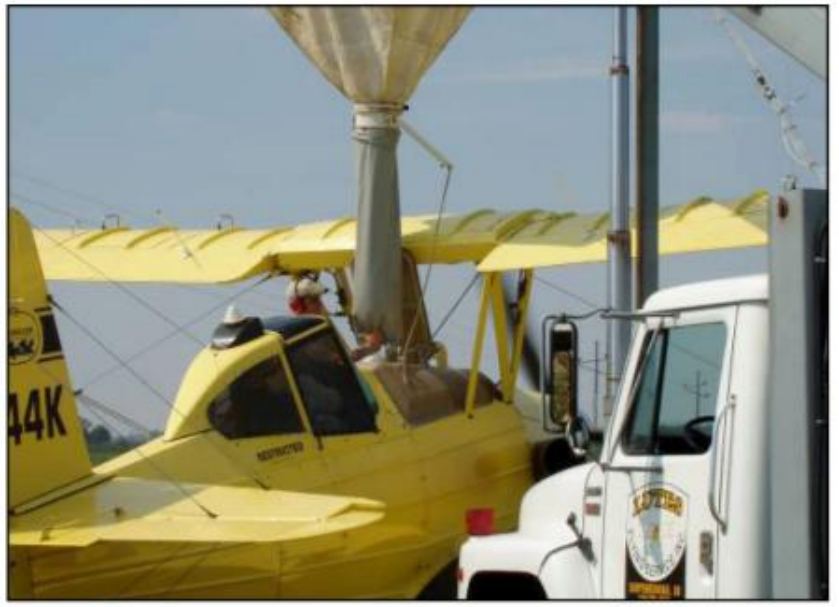
Herbicide	Group No.	1X Rate	Cereal rye	Oat	Hairy vetch	Lentil	Radish
Corn products			Injury Potential[1]				
Atrazine 90DF	5	1.1 lb	2	2	2	2	2
Dual II Magnum	15	1.5 pt	2	1	1	1	1
Balance Flexx	27	5 fl oz	1	1	2	2	**3**
Callisto	27	3 fl oz	1	1	1	2	2
Laudis	27	3 fl oz	1	1	2	2	2
Corvus	2, 27	5.6 fl oz	2	2	2	2	**3**
Hornet WDG	2, 4	5 oz	1	1	**3**	**3**	**3**
Soybean products							
Classic	2	1 oz	1	1	1	1	2
Pursuit	2	4 fl oz	1	1	1	1	2
Prowl H_2O	3	3 pt	2	2	1	1	1
Reflex	14	1.25 pt	1	1	1	1	2

[1]Injury Potential: 1 = little or no risk; 2 = some risk depending upon herbicide rate and environmental factors; 3 = high potential for injury affecting cover crop establishment.

Choose Seeding Method



High-Clearance Sprayer, converted to air seed cover crops
(photo courtesy of Mike Shuter)



Aerial Inter-Crop Seeding

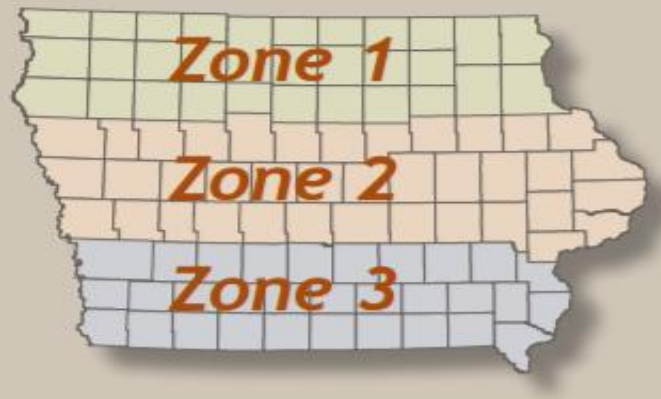
Planting Timing (Requirements)

To get started, try:

Prior to corn: spring oats or spring wheat seeded into standing soybeans when the leaves begin to yellow

Prior to soybeans: winter-hardy cereal rye, winter wheat or winter triticale over-seeded into standing corn or drilled after harvest.

Cover crop planting windows



The latest date of planting for reasonable growth and benefits:

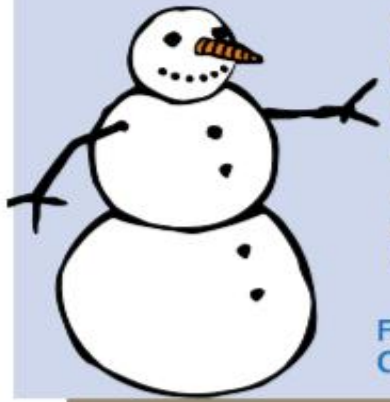
For winter-kill cover crops

Zone 1 — September 9
Zone 2 — September 16
Zone 3 — September 23

For winter hardy cereal grains

Zone 1 — October 21
Zone 2 — October 28
Zone 3 — November 5

Winter-hardy crops



Winter cereal rye
Winter wheat**
Winter triticale**

***Spring versions of wheat and triticale do not survive the harsh Iowa winters.*

Winter-kill crops

Oats
Spring wheat
Brassicas: radish, turnip, mustard
Legumes: crimson clover

*Maybe hardy...

Annual rye grass
Winter canola/rapeseed
Hairy Vetch
Common Vetch

**Further study is needed to explore hardiness of these plants*

For more cover crop choices and to find what will work in your fields, go to the Midwest Cover Crop Council's cover crop decision tool: http://mcccdev.anr.msu.edu/VertIndex.php

Chose Product Rate

Table 1

Late Summer and Fall Cover Crop Seeding Rates

Species Common Name	Winter Hardy?	Drilled Base Rate (lbs/acre of PLS)	Broadcast with Incorporation Base Rate = 1.1 x base rate (lbs/acre of PLS)	Broadcast on Surface Base Rate = 1.2 x base rate (lbs/acre)
Rye, Winter Cereal	Yes - all cultivars	55	61	66
Triticale, Winter	Yes - most cultivars	55	61	66
Wheat, Winter	Yes - many cultivars	55	61	66
Barley, Winter	No	60	66	72
Oats	No	60	66	72
Ryegrass, Annual	No/Sometimes	12	13	14
Mustard, Oriental	No	3	3	4
Radish, Oilseed	No	5	6	6
Rapeseed	No	3	3	4
Turnip, Forage type	No	3	3	4
Vetch, Hairy	Usually/Slow Growth	12	13	14

PLS (Pure Live Seed) - Expression of seeding rate in pounds per acre
PLS = (% germination + dormant seed x % purity) ÷ 100

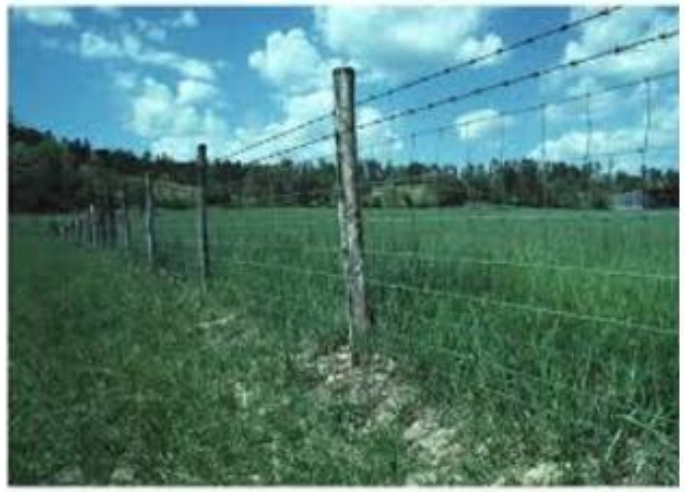
Late Summer and Fall Cover Crop Recommended Planting Dates

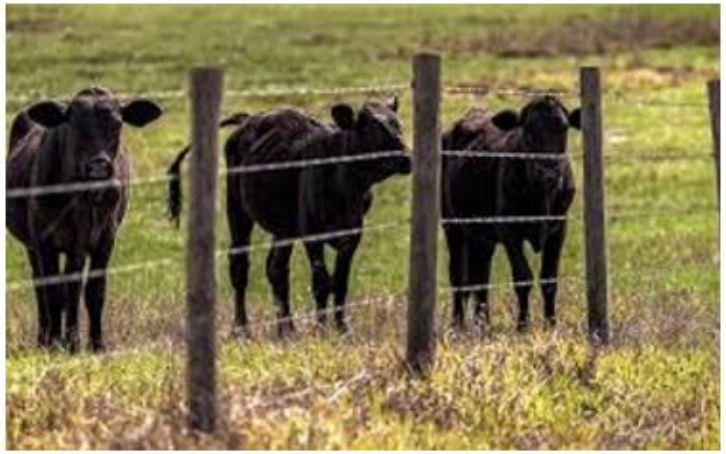
Zone (See Map[2])	Drilled or Incorporated Planting Date[1] for Winter Hardy Cover Crops	Drilled or Incorporated Planting Date[1] for Cool Season Non-Winter Hardy Cover Crops
Zone 1	October 21	September 9
Zone 2	October 28	September 16
Zone 3	November 5	September 23

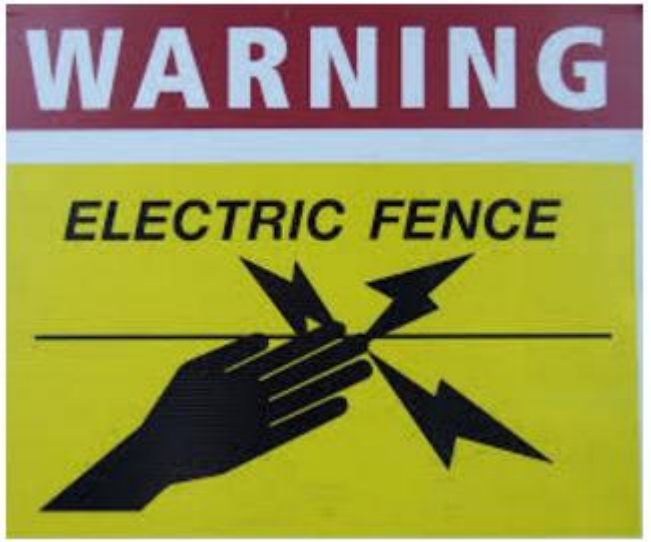
[1]When surface broadcasting, plant 7 days earlier than the recommended date to compensate for slower establishment and variable rainfall. Surface broadcasting becomes less effective because of reduced tillering or branching later in planting windows, especially after non-winter hardy planting dates.

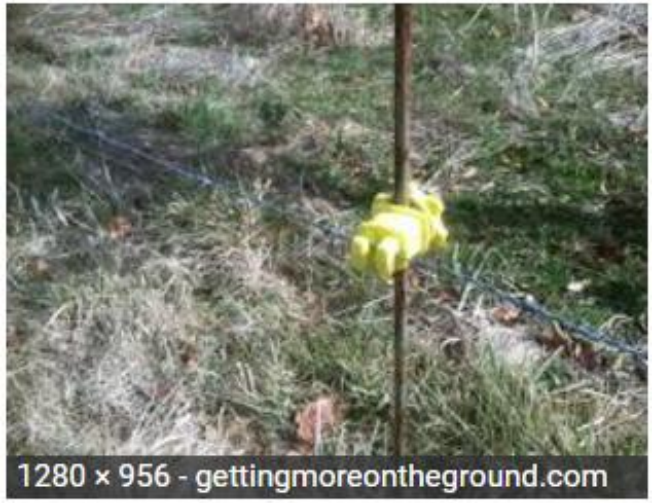
[2]See "NRCS Technical Note 38: Cover Crop Management" for Zone map.

Make Sure You Have a Suitable Fencing Plan









Cereal Rye & Triticale for Spring Grazing

Cereal rye & radish seeded into standing field corn mid August

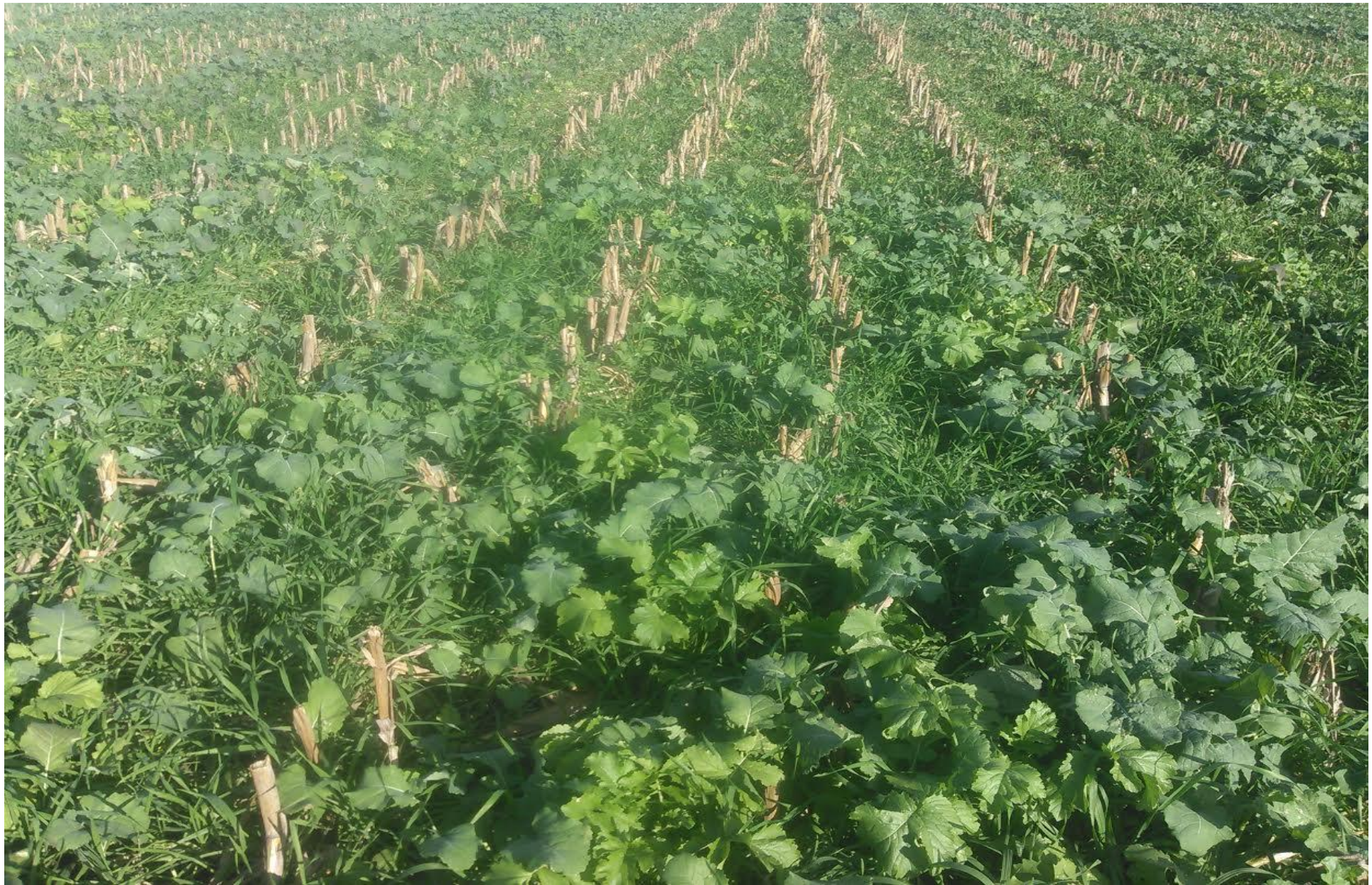
Cereal rye & rape seeded into standing popcorn seed production mid August

Close-up cereal rye & rape in seed popcorn residue

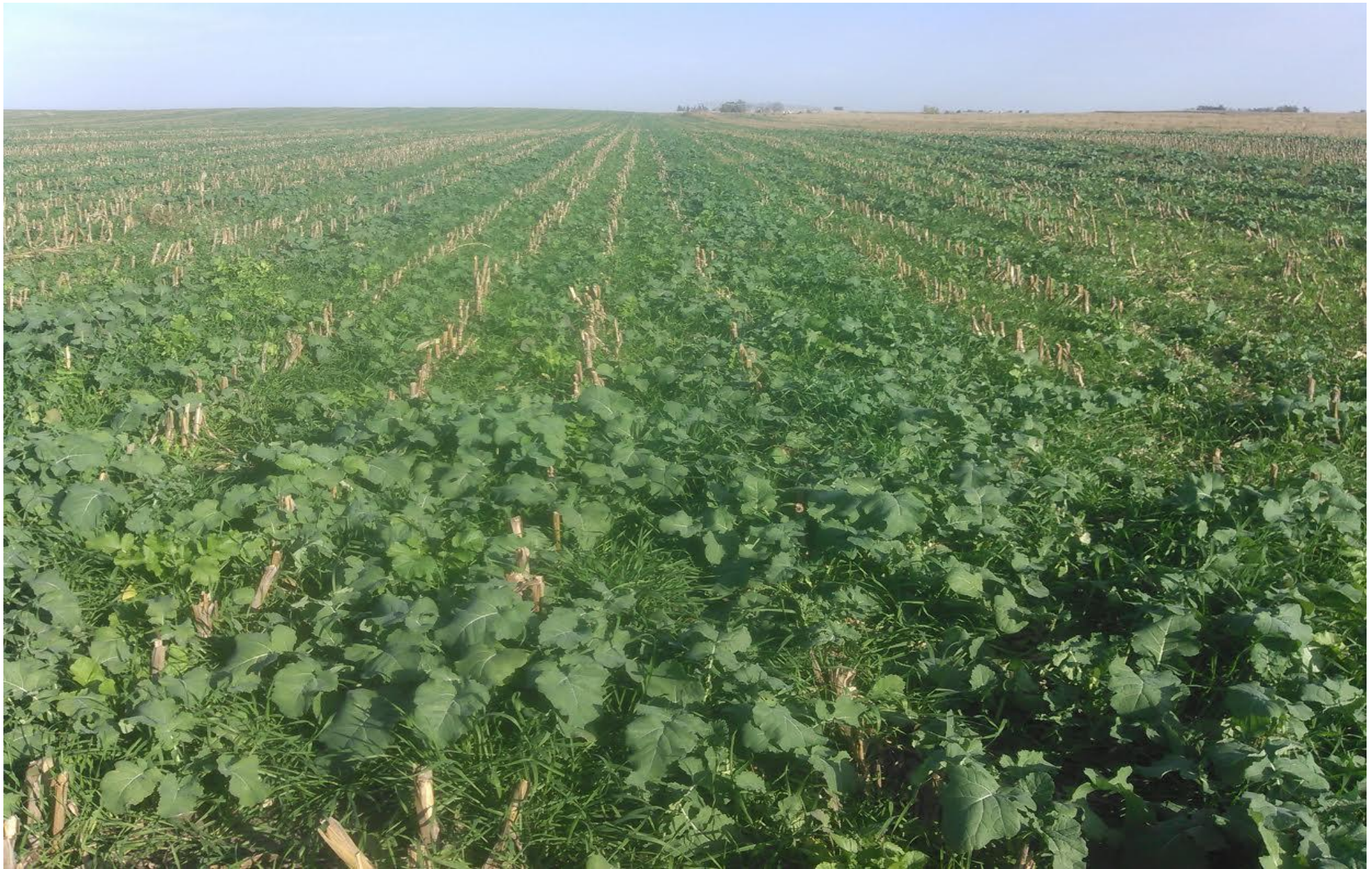
View From Combine

Another View From Combine

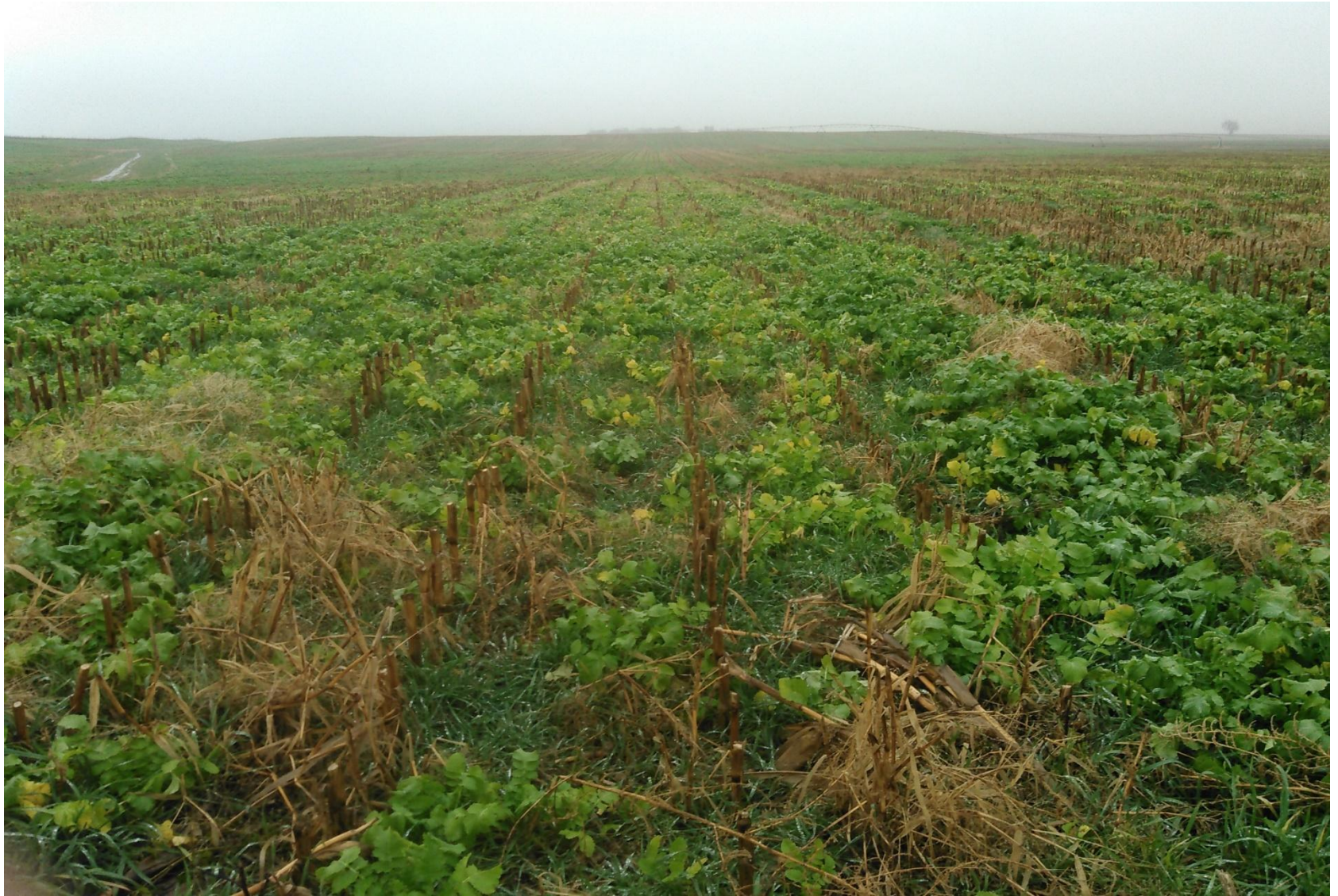
View After Combine



Another View After Combine

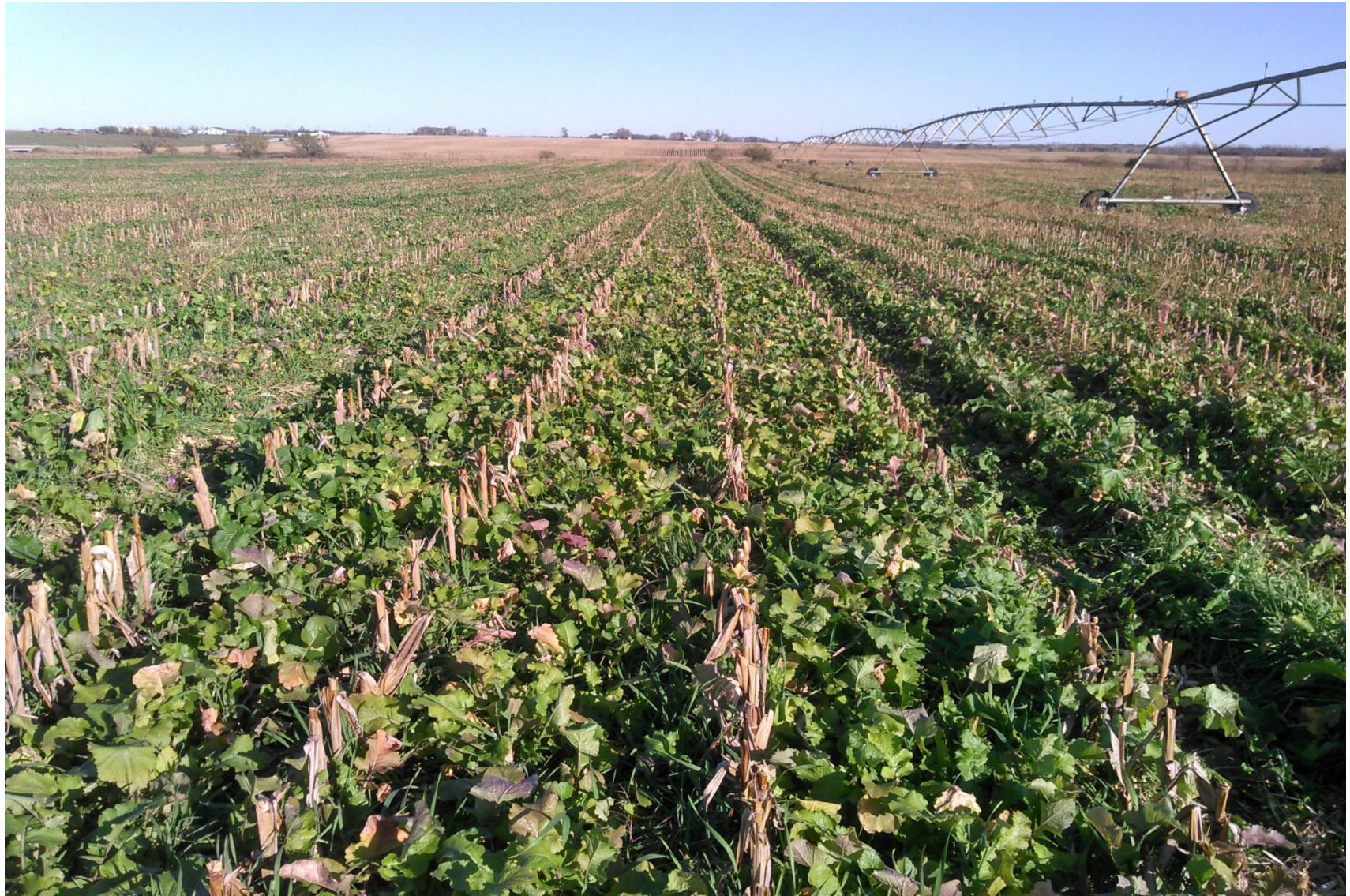


Cereal Rye & Radish seeded into standing popcorn seed production mid August

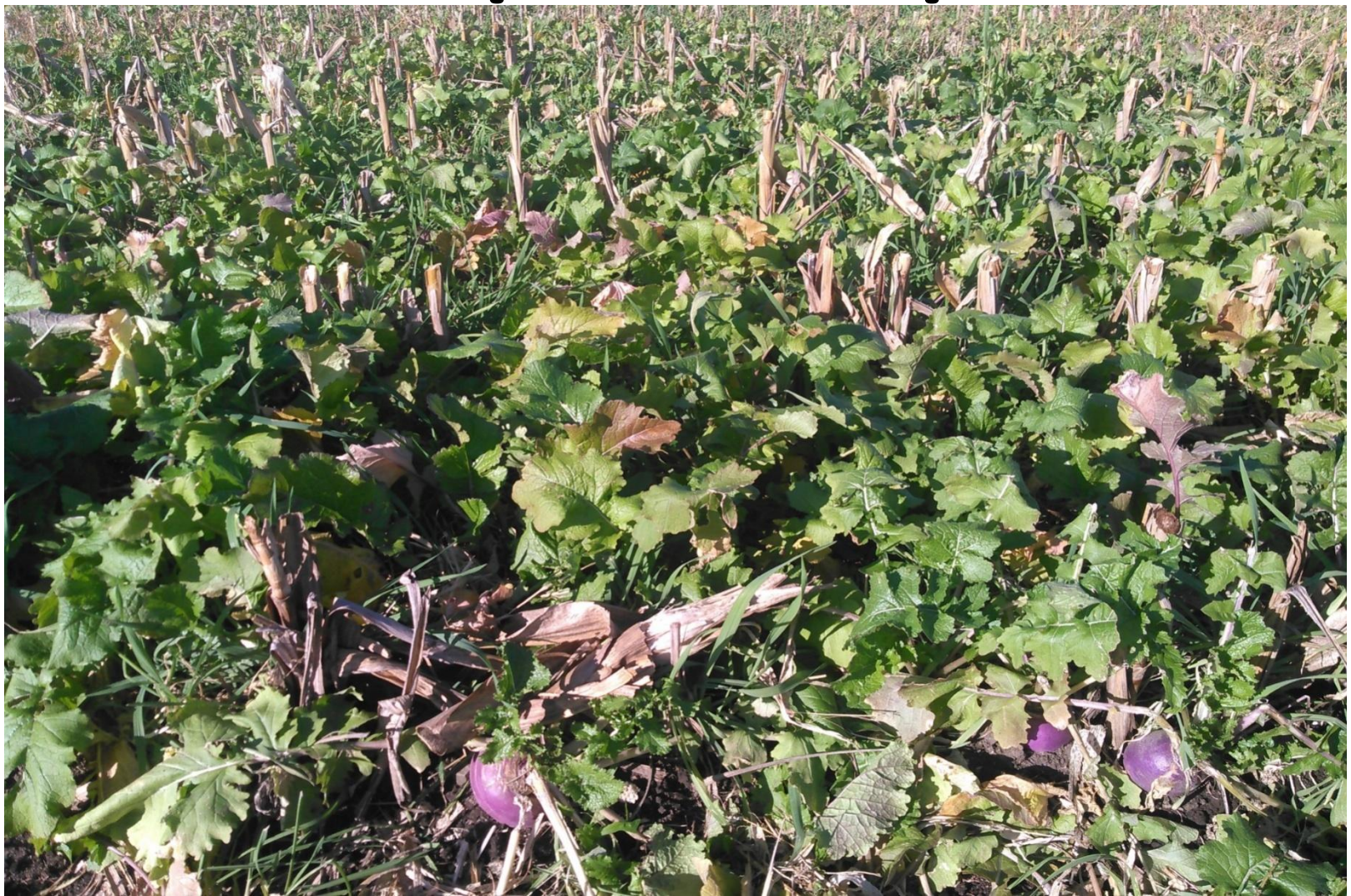


Close-up of radish development seeded mid August

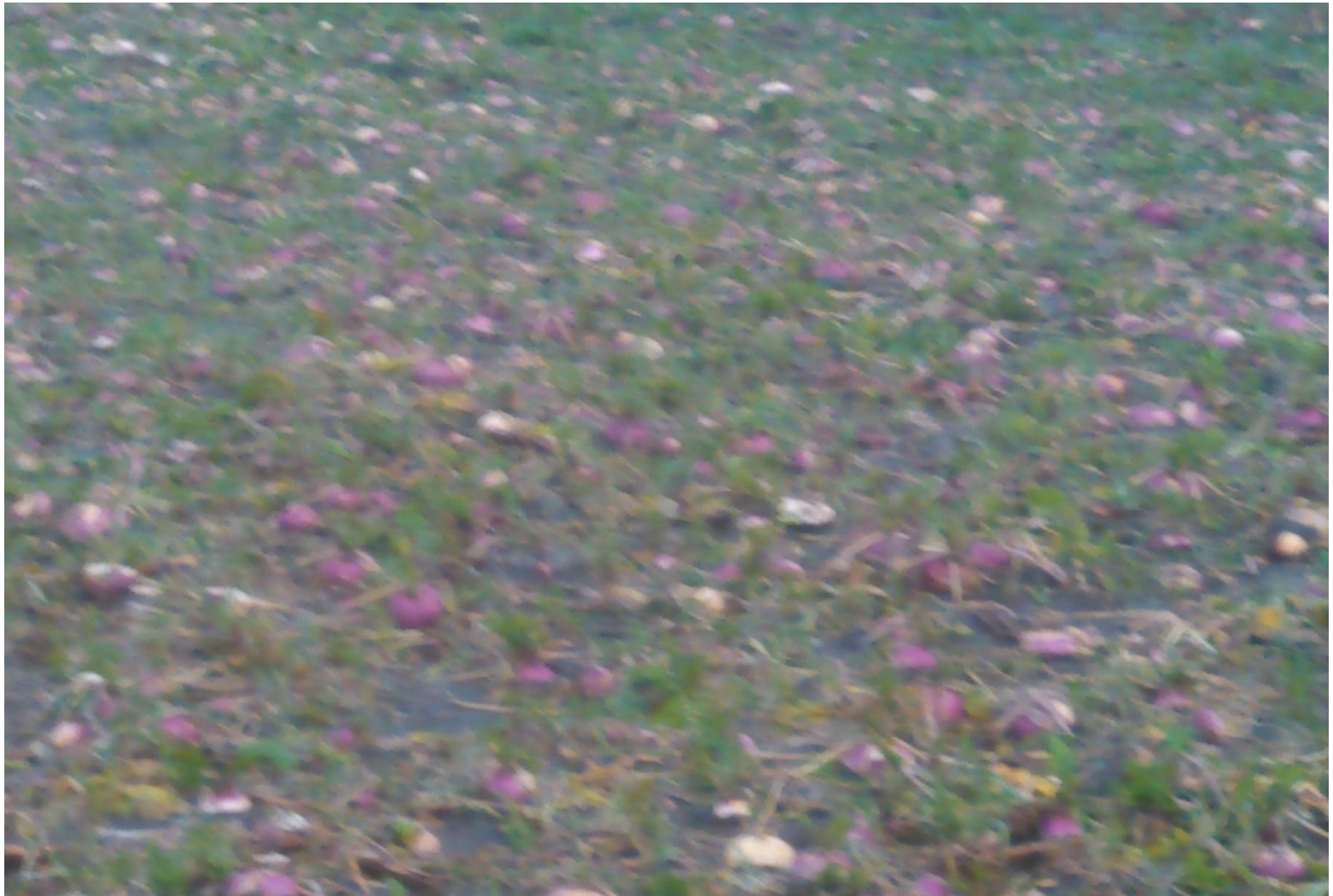
Cereal Rye & Turnips seeded into standing popcorn seed production mid August



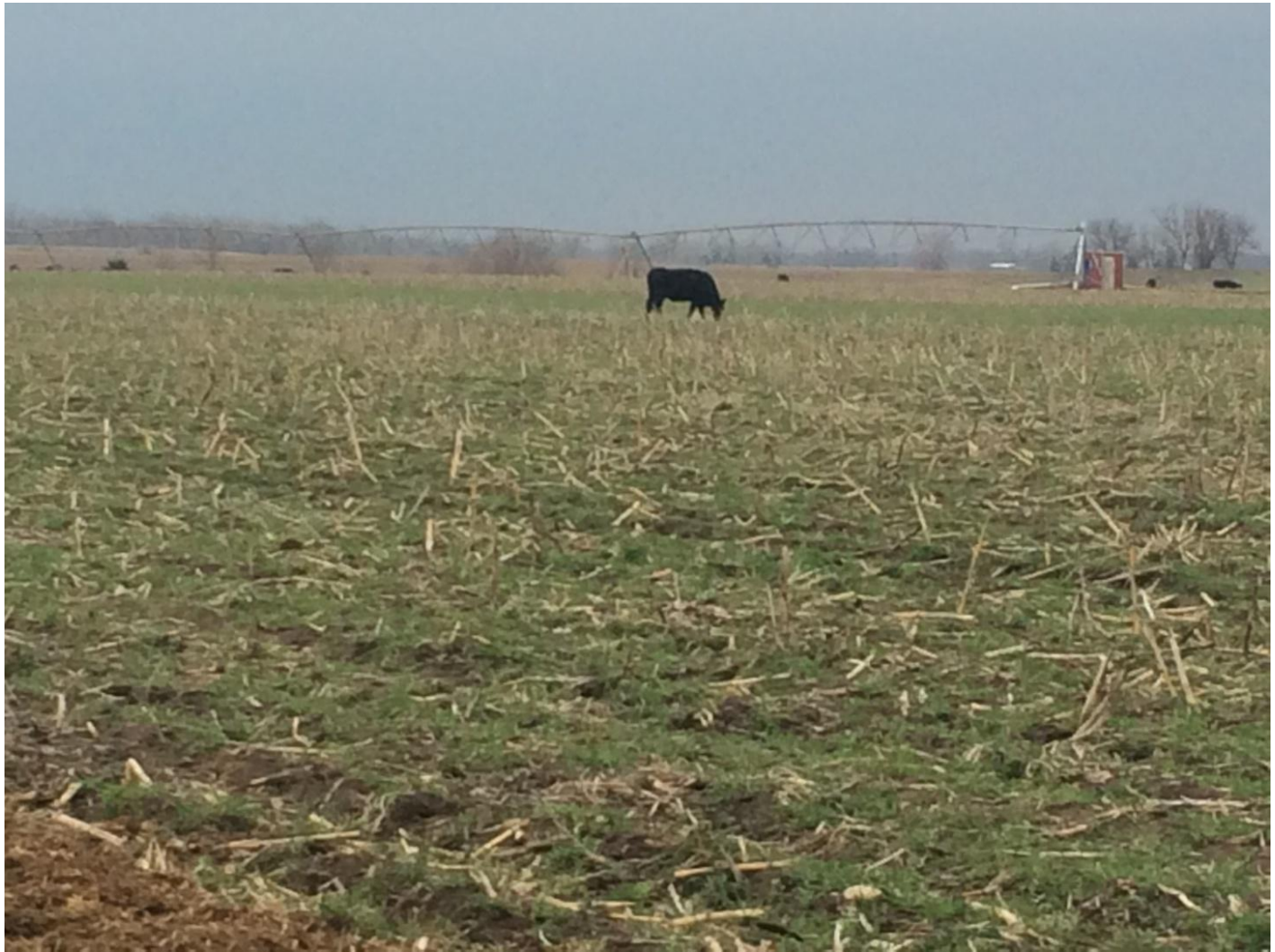
Close-up of Cereal Rye & Purple Top Turnips



Purple Top Turnips & Cereal Rye after fall grazing



Cereal Rye, Turnip, & Rape Mix after Grazing in the Spring



Economic Benefits from Utilizing Cover Crops as Forage

- **4 cattle and row crop farmers in the North Raccoon watershed are participating in this demonstration project until 2018.**
- **Cooperators seeded cover crops with the intention of utilizing the cover crop as cattle forage.**
- **Cattle started grazing the cover crop mixtures in the fall of 2015, and continued into the winter and spring of 2016. Fall and winter cover crop forage production was recorded.**
- **2nd Year of a 3 Year Trial**

PRACTICAL farmers of Iowa
working together, always learning

Livestock Research

Economic Benefits from Utilizing Cover Crops as Forage

Staff Contact:
Meghan Filbert– (515) 232-5661
meghan@practicalfarmers.org

Cooperators:
- Ben Albright - Lytton
- Wesley Degner - Lytton
- Bill Frederick - Jefferson
- Mark Schleisman - Lake City

Funding By:
Iowa Dept. of Agriculture and Land Stewardship's Water Quality Initiative

Web Link:
http://bit.ly/pfilivestock

In a Nutshell

- Planting cover crops, then grazing or harvesting them, is a practical way to effectively reduce nutrient pollution, plus provide economic benefits to cattle owners.
- This represents a win-win for livestock producers and water quality for Iowa.

Key findings

- Four farmers in northwest Iowa reported that in the fall and winter of 2015, cover crops provided 0.07 to 3.74 tons of dry matter per acre.
- Grazing this cover saved farmers $1,306 to $22,801 in hay or other stored feed expenses

Project Timeline:
August 2015 - March 2016

Methods

Cereal rye and oats greening up and almost ready to be grazed by Ben Albright's cattle near Lytton.

Trial Design

- Cover crops were seeded at various times and of various mixes as decided by each individual grower.

- Cover crop forage was manually harvested from random areas, dried, and the quantity of dry matter available for grazing calculated.

Forage Measurements

Table 1. Farm location, field size, previous crop, cover crop species, seeding date, seeding method, biomass sampling dates and biomass production for each field.

Farmer, Location	Field	Field Size (ac)	Previous Crop	Cover Crop Species	Seeding Date & Method*	Sampling Date	Fall Cover Crop Biomass (t/ac)
Wesley Degner, Lytton	1 2	67 18	Soybeans Corn	Cereal Rye	8/31/15-A	10/9/15 10/9/15	0.47 0.07
Ben Albright, Lytton	1 2 3	11 79 50	Soybeans	Cereal Rye, Oats	9/10/15-A	10/20/15 10/29/15 11/15/15	0.64 0.57 1.36
Mark Schleisman, Lake City	1 2 3 4 5	83 73 64 149 229	Popcorn Corn Popcorn Popcorn Popcorn	Cereal Rye, Turnips Cereal Rye, Rape Cereal Rye, Turnips Cereal Rye, Radish Cereal Rye, Radish	8/14/15-HC 8/14/15-HC 8/15/15-HC 8/15/15-HC 9/20/15-HC	10/15/15 12/11/15 11/10/15 12/24/15 2/4/16	1.82 0.36 1.15 1.84 0.19
Bill Frederick, Jefferson	1 2 3 4	17 40 25 11	Rye Corn Soybeans Soybeans	Oats, Turnips, Kale, Soybean Cereal Rye Cereal Rye, Turnips Winter Wheat	8/04/15-D 9/06/15-D 9/19/15-A 10/10/15-D	11/2/15 11/2/15 10/16/15 11/2/15	3.74 0.21 0.09 0.36

*A=Aerial, HC=High Clearance, D=Drill

Value of Cover Crop Grazed

Table 2. Total cover crop DM produced and consumed by cattle and how much this DM would have cost as hay.

Location	Total Cover Crop Acres	Total tons of DM produced by cover crops	Total tons of cover crop DM consumed by cattle (assuming 50% utilization)	Cost of DM if purchased as hay (assuming $80/t)	Value of cover crop DM per acre in hay terms
Lytton	85	32.66	16.33	**$1,306**	**$15.39**
Lytton	140	120.02	60.01	**$4,801**	**$34.29**
Lake City	598	570.03	285.02	**$22,801**	**$39.99**
Jefferson	93	78.90	39.45	**$3,156**	**$33.94**

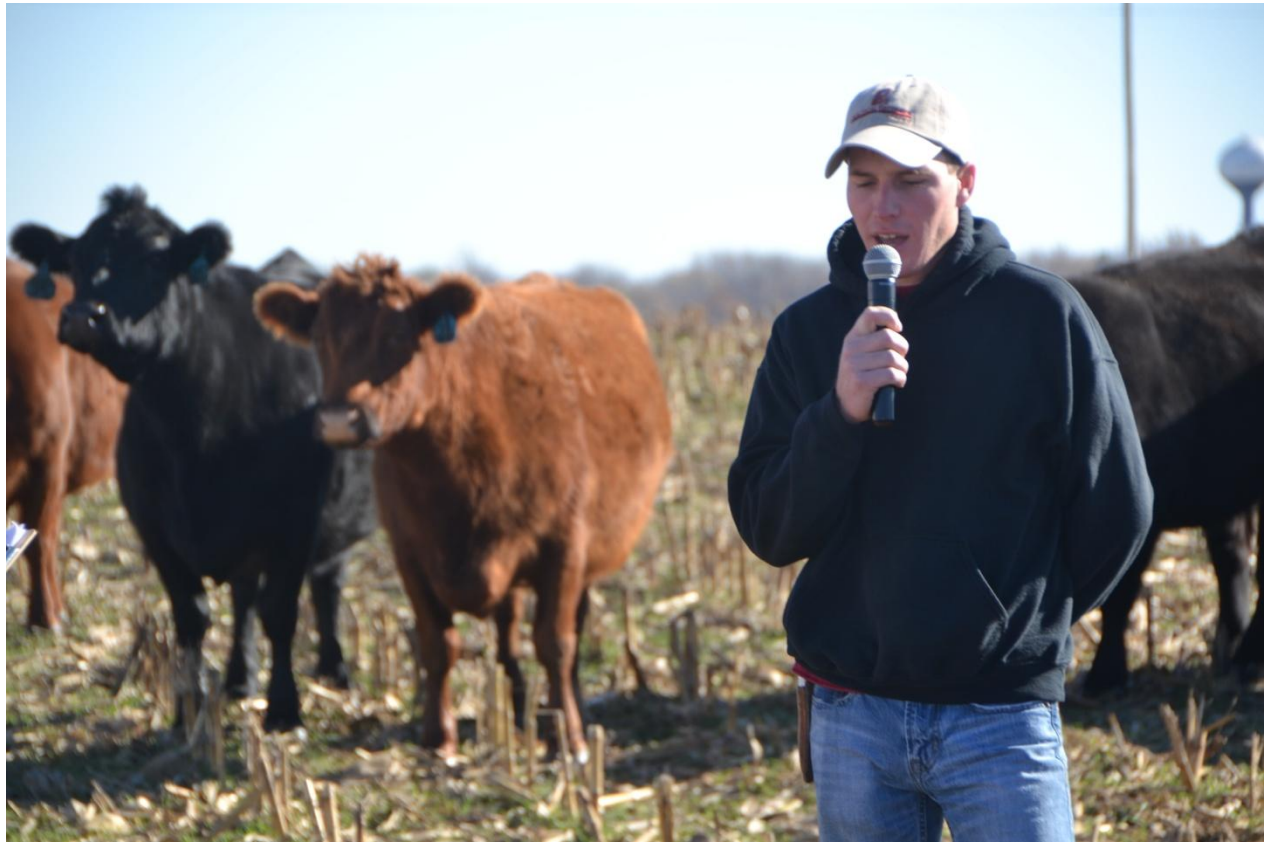
Findings/Results

- Four farmers in northwest Iowa reported that in the fall and winter of 2015, cover crops provided 0.07 to 3.74 tons of dry matter per acre.

- Grazing this cover saved farmers $1,306 to $22,801 in hay or other stored feed expenses.

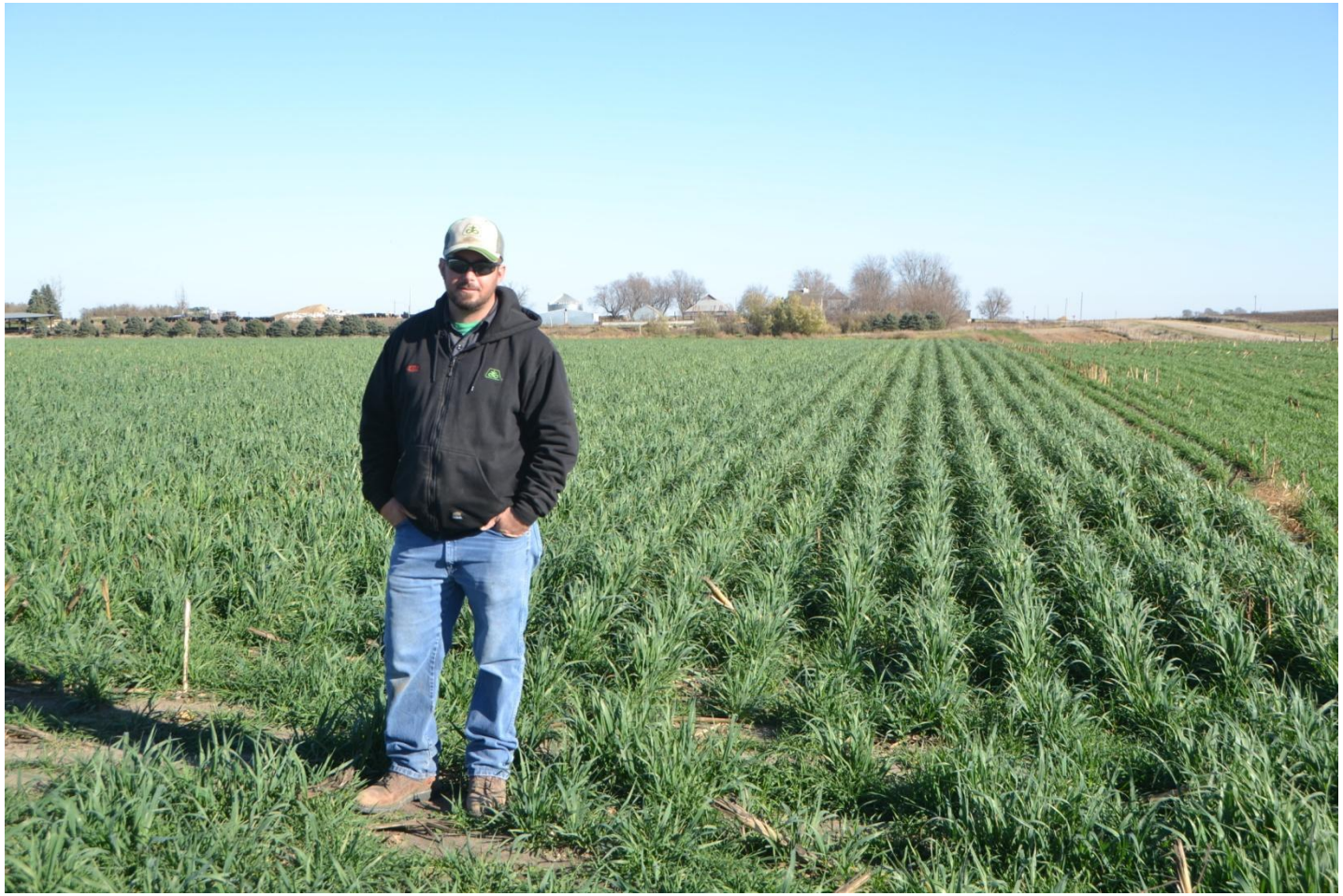
- In the case of my farm the savings per cow was $71.25 per head ($22,801 divided by 320 cows grazed).

Findings/Results



Wes estimated he saved even more than $1,306 in dry matter costs. “If I would have had to feed my cows every day for those 50 days they grazed cover crops, it would cost me $1 to $1.50 a day to feed the cows, so I think I’ve actually saved about $3,000.”

Ben Albright fall drilled cereal rye & oats after silage



Spring Grazed