



Cover Crops and Spring Management

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Cover Crop Spring Management

- ✓ Applications and 2021
Fall Establishment
- ✓ Biomass
- ✓ Termination
- ✓ Nitrogen Management
- ✓ Planting Considerations



Putnam, IL February 28th, 2022

**Note of time!*

Comparisons In The Field

- ✓ PCM 5YT
- ✓ Agronomic Differences
- ✓ Transitions
- ✓ Field Observations and Farmer Experiences
- ✓ Follow the Field

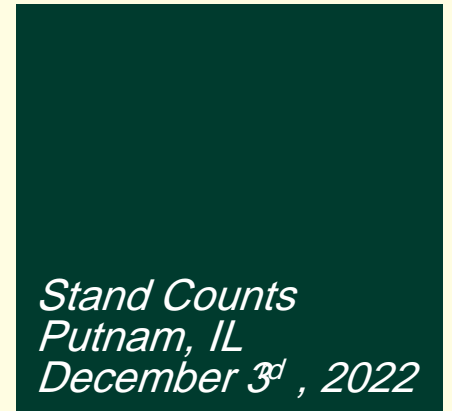


Applications and Fall Establishment

Application Methods

Row Spacing & Goals

Fall 2022 Establishment



Applications- Interseeding/Overseeding

Wisconsin Trials



Reuschel Farms



Photo Pete Fandel



Isermann Farms



Illinois 2020

Applications- Drills



Reuschel Farms



Peterson Farms



Thorn Farms



Magsamen Farms



Goeckner Farms



Applications- Faster!



Moose/Curby Farms

Strip Till Decatur Field Day



Rincker Planter



Backing Plate



SeedRight Plates

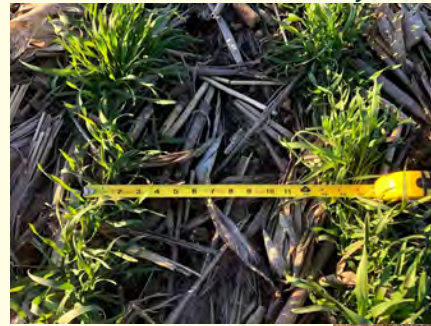
Applications- Spacing



*Altamont, IL
May 8, 2019*



*Golden, IL
June 2, 2019*



*Ivesdale, IL
May 20, 2020*



*Ivesdale, IL
April 27, 2021*

Shelbyville, IL March 29, 2021

Applications- Goals/Planning

The best plan.....

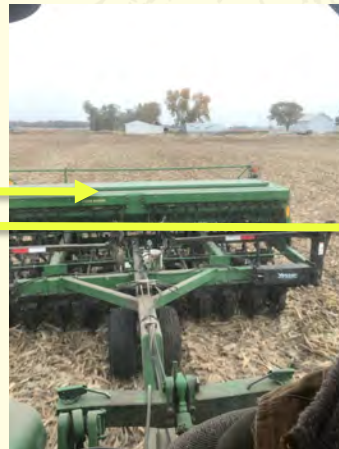


*Wyanet, IL
Harvest
Oct. 23, 2021*



Wapella, IL Oct. 10 2019

Wyanet, IL Nov. 9 2021



Moweaqua, IL Oct. 13 2021

Goals →



Springerton, IL May 10, 2019

or



Gillespie, IL April 27, 2020

or



Palmyra, MO May 15, 2019



Cover Crop Establishment Planting Fall 2021

Stockton, IL Sept. 17 2021



*New Berlin, IL
Dec. 2, 2021
Planted November*



*Wyanet, IL
Nov. 26, 2021*



*Bunker Hill, IL
Nov. 17, 2021*

*Planted Oct. 5
Rape
Cereal Rye
Radish*



Putnum, IL Dec. 3, 2021

Putnum, IL Feb. 28, 2022

*Planted Oct. 1
35lbs Cereal Rye*





Example

*Bloomington, IL
Nov. 9, 2021*

Planted Sept. 1, 2021





*Champaign, IL
Nov. 9, 2021*



*Palmer, IL
Nov. 2, 2021*

*Planted
Oct. 2, 2021*



*Moweaqua, IL
Oct. 13, 2021*

Broadcast Mid-Sept



*Aerial
Bloomington, IL
Oct. 28, 2022*

*Flown Oct. 7, 2021
Rained 1.3" overnight
48 lbs./acre*



Biomass

Material Breakdown

Species

Balance

Why we start here...

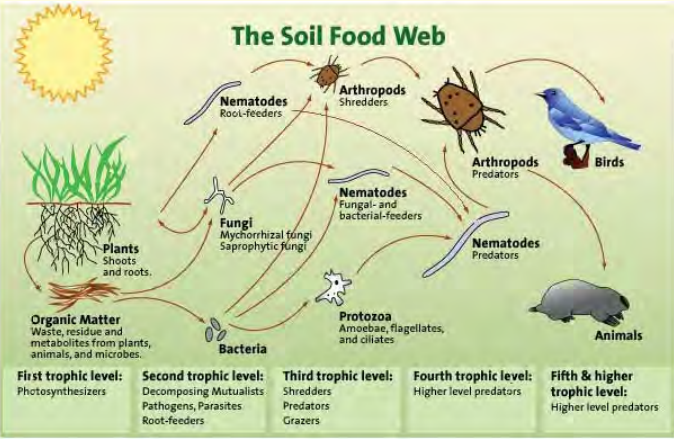


*Residue Management
Monticello, IL
June 18th, 2019*



*Planting
Ivesdale, IL
May 10th, 2020*

Biomass Material • Food Web



<https://www.womenspress.com/the-science-of-soil/>



VS.



Biomass Material • Diet



← Microorganisms need carbon to stay alive

24:1

TOO MUCH
≥24:1

TOO LITTLE
≤24:1

Biomass Material • Rate of Breakdown



Biomass Material • C:N Reference



Material	C:N Ratio*
Wheat Straw	80:1
Oat Straw	70:1
Corn Stover	57:1
Pea Straw	29:1
Mature Alfalfa Hay	25:1
Ideal Microbial Diet	24:1
Rotted Barnyard Manure	20:1
Legume Hay	17:1
Beef Manure	17:1
Young Alfalfa Hay	13:1
Soil Microbs (average)	8:1



*USDA NRCS

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd331820.pdf

Biomass Material • C:N Slower



Material	C:N Ratio*
Wheat Straw	80:1
Oat Straw	70:1
Corn Stover	57:1
Pea Straw	29:1
Rye Cover Crop (Vegetative)	26:1
Mature Legumes	25:1
Ideal Microbial Diet	24:1
Daikon Radish	19:1
Crimson Clover	17:1
Ryegrass (Vegetative)	15:1
Young Alfalfa Hay	13:1
Hairy Vetch Cover Crop	11:1
Soil Microbs (average)	8:1



*USDA NRCS

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd331820.pdf

Biomass Material • C:N Maturity



Material	C:N Ratio*
Rye Straw	82:1
Wheat Straw	80:1
Oat Straw	70:1
Corn Stover	57:1
Rye Cover Crop (anthesis)	37:1
Pea Straw	29:1
Rye Cover Crop (Vegetative)	26:1
Mature Legumes	25:1
Ideal Microbial Diet	24:1
Daikon Radish	19:1
Crimson Clover	17:1
Ryegrass (Vegetative)	15:1
Young Alfalfa Hay	13:1
Hairy Vetch Cover Crop	11:1
Soil Microbs (average)	8:1



*USDA NRCS

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd331820.pdf

Biomass Material • Balance



*USDA NRCS

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd331820.pdf

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Rye Straw	82:1
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Biomass Grasses



Biomass Annual Ryegrass





Annual Ryegrass Variety Report

Mike Plumer

University of Illinois Extension

June 2008

PURDUE
EXTENSION

LOCAL FACES
COUNTLESS CONNECTIONS

WS-52-W

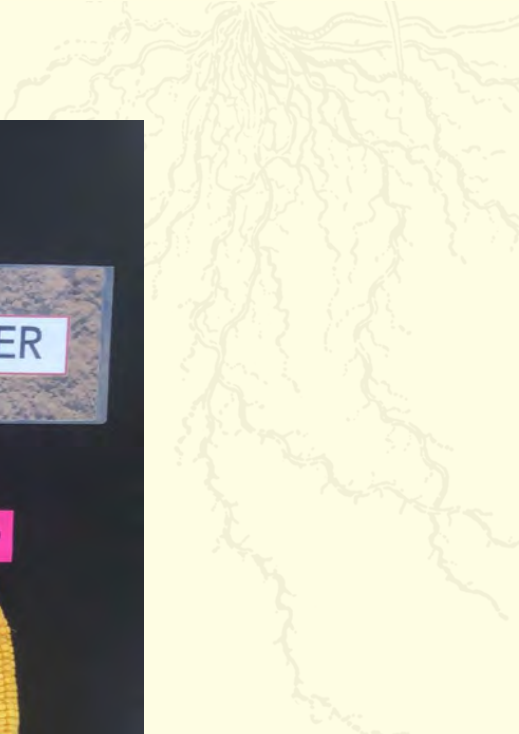
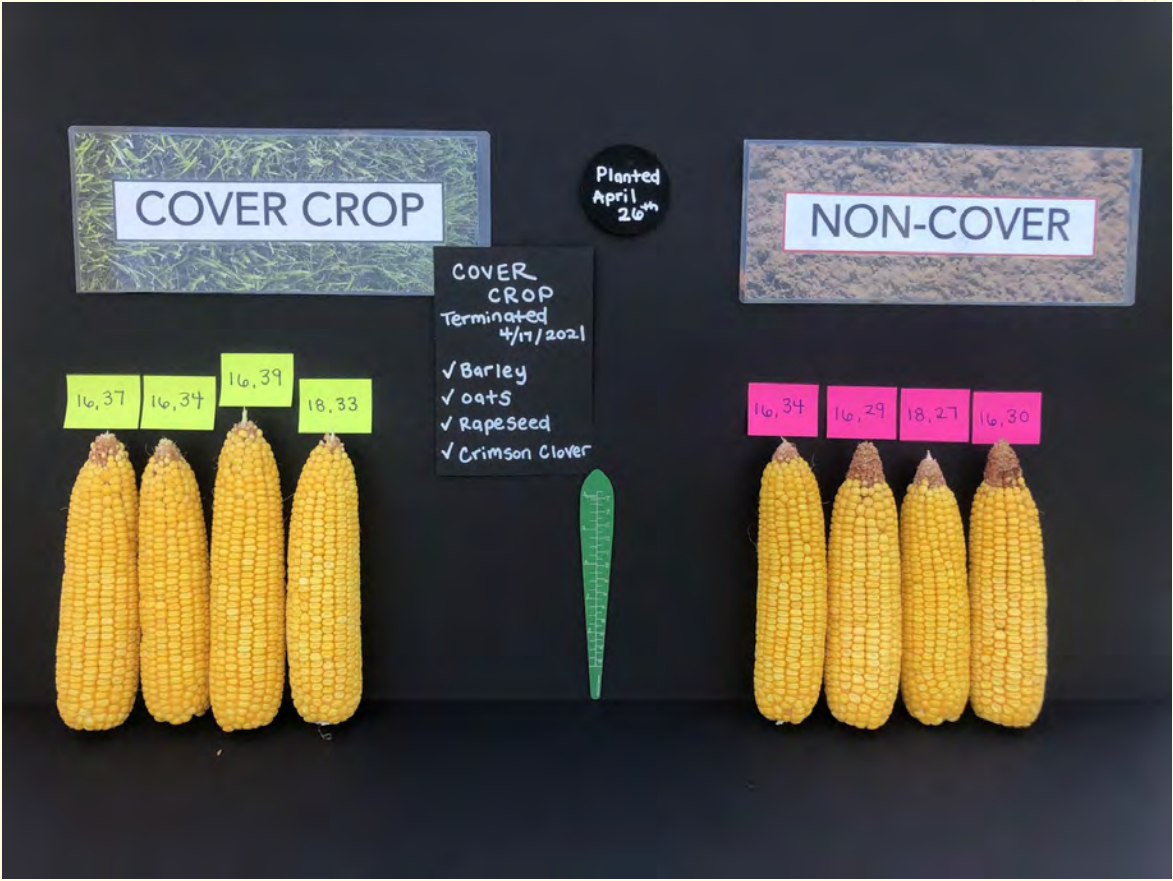
TERMINATING COVER CROPS

Successful Annual Ryegrass Termination with Herbicides

Authors:
Travis Legleiter
Bill Johnson
Bryan Young

- Field soil moisture conditions that allow for equipment to enter and pass over
- Air temperatures that consistently remain above 45°F for three to five days
- Spraying before annual ryegrass reaches 8 inches tall and prior to seed head production

Biomass Barley, Oats, Rapeseed, Crimson Clover



Biomass Balance



*Ivesdale, IL
Dec. 15, 2021*

Biomass Balance



*Ivesdale, IL
March 24, 2021*

Biomass Balance



*Ivesdale, IL
April 27, 2021*

Biomass Weed Control





Termination & Rolling Two Ways

Pesotum, IL June 23, 2021

Termination-Key Considerations

- ✓ Nitrogen Carriers
- ✓ Leaf Burn
- ✓ Broadleaf Control
- ✓ Warm Temps = Active Growth
- ✓ Watch Your Tank Mixes
 - Atrazine, Metribuzin



PURDUE
EXTENSION

LOCAL FACES
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WS-52-W

TERMINATING COVER CROPS

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Termination- Growth



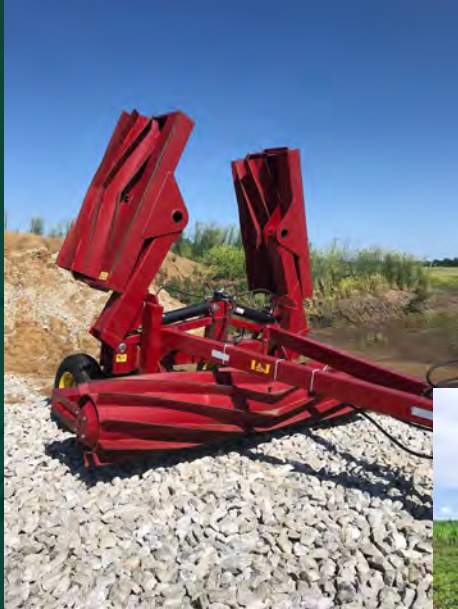
Putnam, IL Feb. 28, 2022

Termination- Rolling



Penfield, IL July 20, 2021

Termination- Rolling



Rolling



Nitrogen

In No-Till or Cover Crops
Complimenting Soil Health

**Do NOT plant cereal rye before corn*



*Kewanee, IL
Sept. 3rd, 2019*



*Aviston, IL
May 31st, 2018*



Allelopathy

The chemical inhibition of one plant (or other organism) by another, due to the release into the environment of substances acting as germination or growth inhibitors.

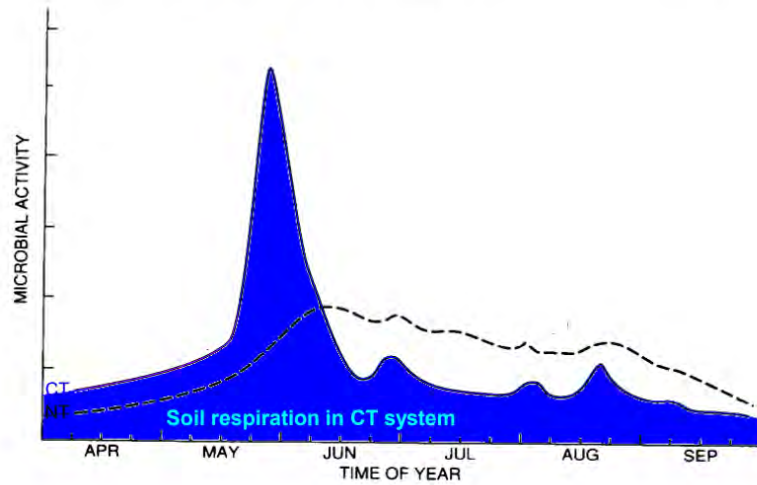
Key Considerations!

- ✓ Planting Date
- ✓ Planting Depth
- ✓ Seed Slot



*Altamont, IL
June 7th, 2019*

Effect of tillage on microbial activity



Havlin et al. (1999)



Decatur, IL 2018

Nitrogen- Key Considerations



*Altamont, IL
July 2nd, 2019*



*Aviston, IL
May 31st, 2018*

Key Considerations!

- ✓ N at planting
- Ideally
- ✓ 30 units of banded N with the planter

Planting

Connecting the concepts

- ✓ Biomass
- ✓ Termination
- ✓ Nitrogen



Planting



Kimble Farms

Planting



Uphoff Farms

Planting



April 6, 2020

Conditions fit to plant

A cool, wet April led to late emergence - here we are maximizing soil health benefits, suppressing weeds & keeping the seed bed ideal for soybean survival.

Residue is breaking down due to timely termination during the vegetative stage and keeping soils moist/cool during the hot months of the year.

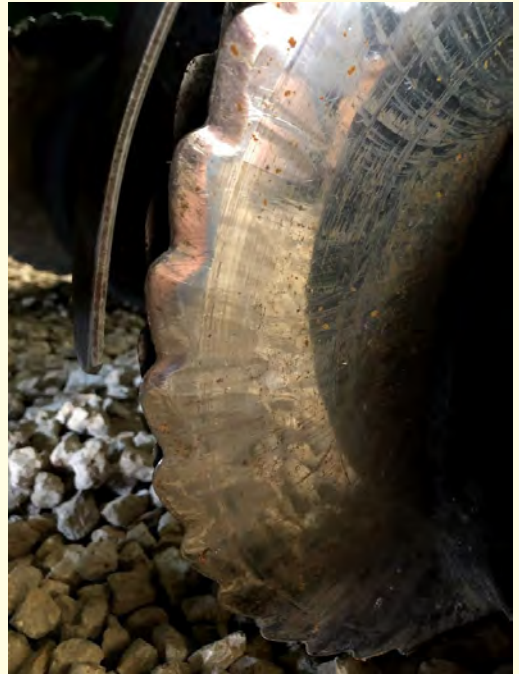
June 16, 2020



April 27, 2020

September 1, 2020











NON-COVER



COVER CROP





Planted: April 16, 2020

COVER CROP

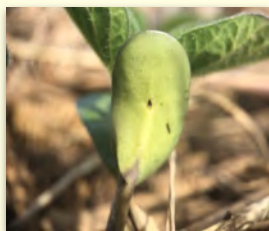
NON-COVER

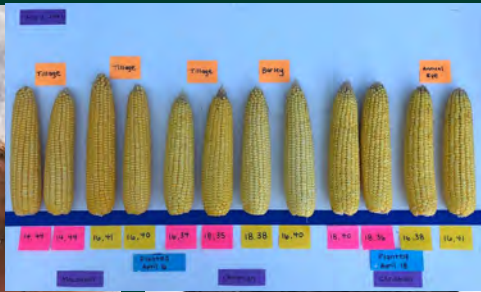


Planting Date: April 15, 2020

NON-COVER

COVER CROP







Thank you!



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