

# ROOT 5 FARM

FAIRLEE, VERMONT

## Cover Crops and Rotations

Vermont Veg & Berry Growers Association 2025



# Outline of Presentation

- Overview of Root 5 Farm
- Planning Tools to de-stress cover cropping
- Pros and Cons of various Cover Crop mixes



ROOT **5** FARM  
FAIRLEE GROWN ORGANIC







- 38 acre farm
- +/- 8 acres of mixed vegetables
- +/- 12 acres of cover crops
- Certified organic production



400 CSA shares each week from  
Late April to the end of November

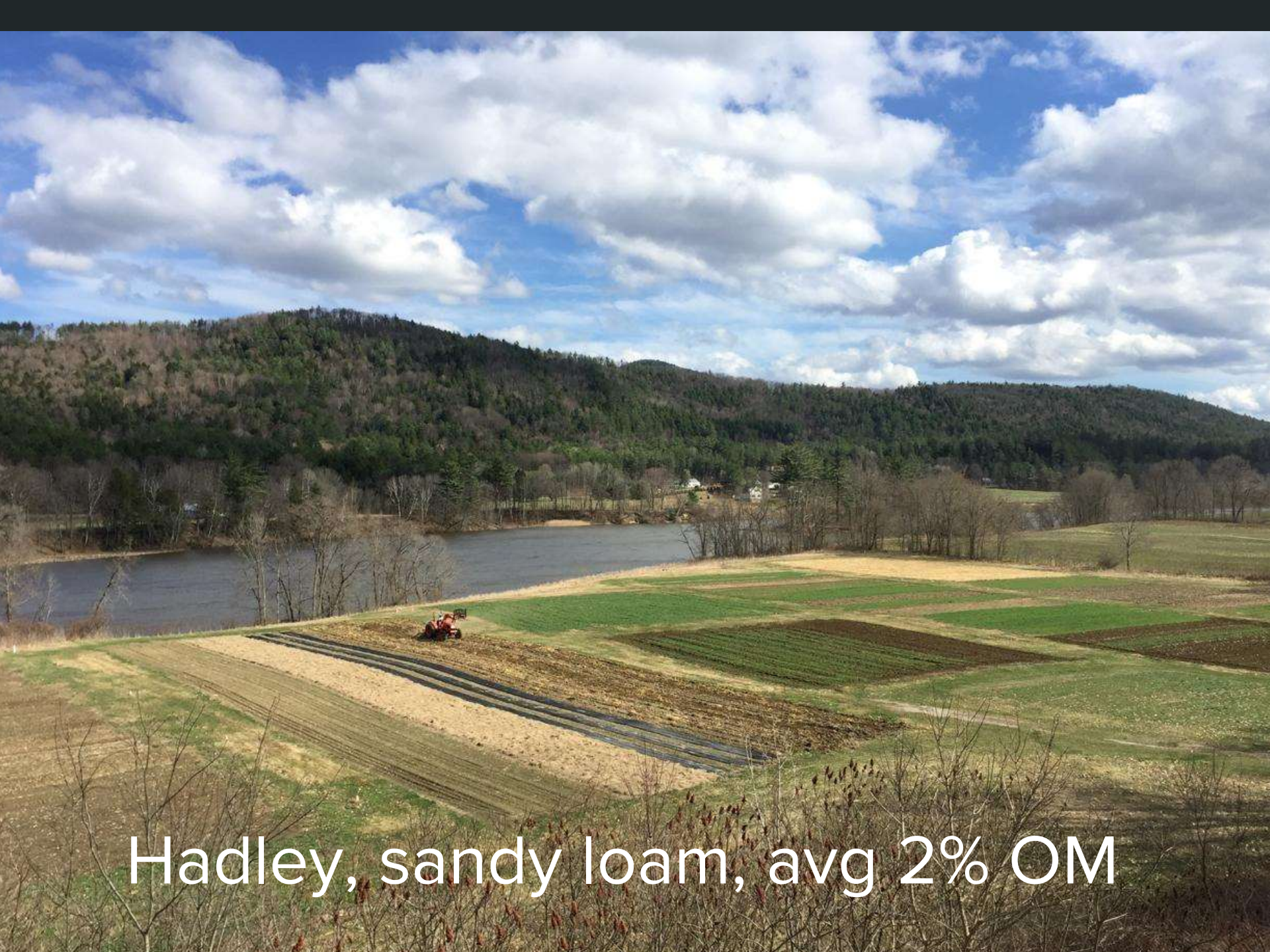


Wholesale to local grocery stores



6,000 lbs of Sauerkraut





Hadley, sandy loam, avg 2% OM

# Goals of Cover Cropping:

1. Protect soil structure
2. Feed soil microbes
3. Build Organic Matter
4. Break cycles of pests and diseases
5. Grow our own nitrogen



# Our Biggest Challenge

## COMPLEXITY!

- Decision making fatigue
- One more schedule to stay on top of
- Conditions on the ground don't match our plans
- The importance of getting the timing and variety mix right so cover crop residue has time to break down, nitrogen is released, and beds are ready for planting

# Three Planning Tools

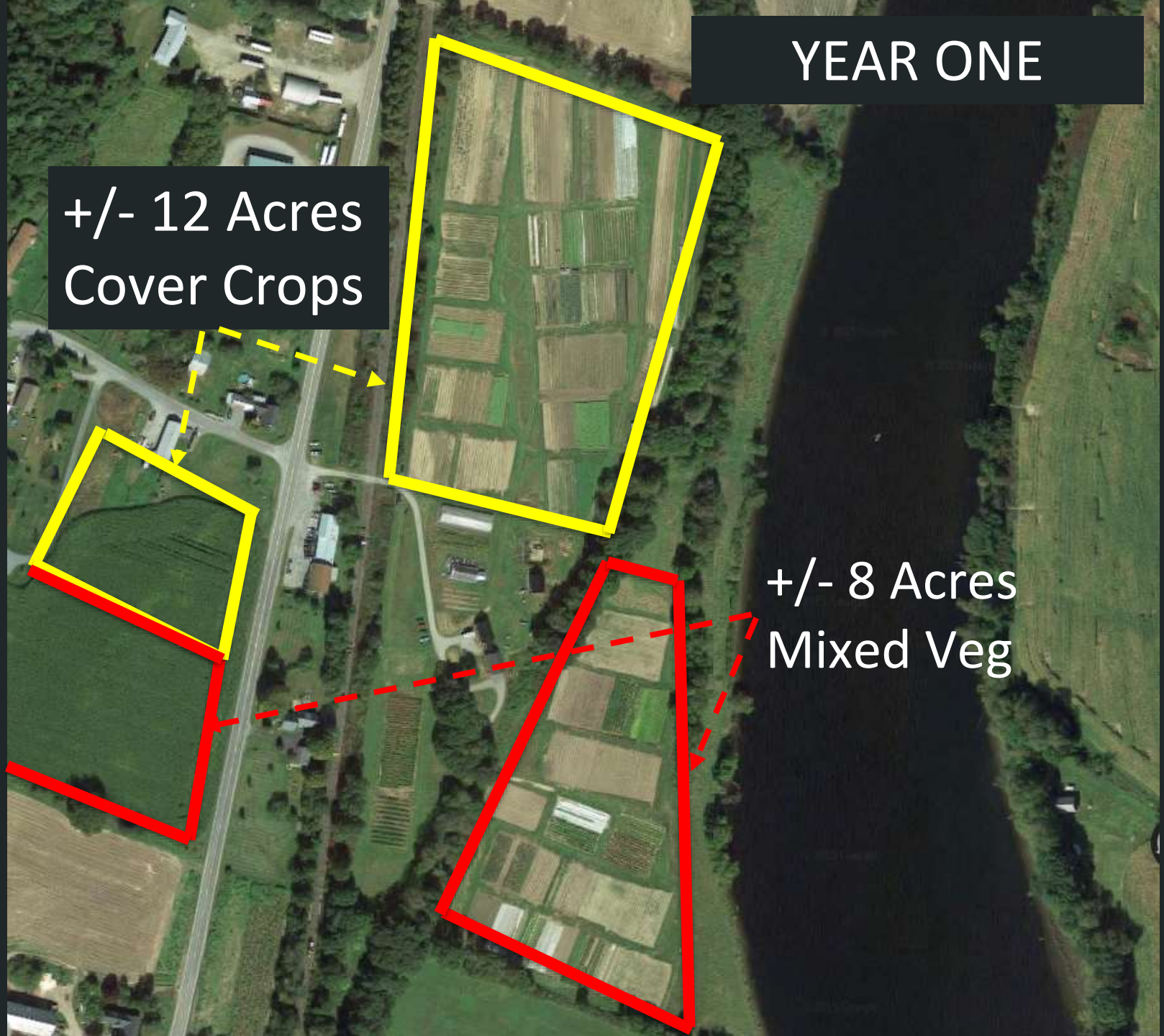
1. Field Mapping
2. Decision Making Tree
3. Seeding Rate Calculator



YEAR ONE

+/- 12 Acres  
Cover Crops

+/- 8 Acres  
Mixed Veg





YEAR TWO

+/- 8 Acres  
Mixed Veg

2 year  
Cover  
Crops

+/- 12 Acres  
Cover Crops





# Cover Crop Decision Making Tree

## SPRING FIELD CONDITIONS

**Overwintered  
Cover Crop  
(Rye/vetch or  
Clover)**

**Winter Killed  
Cover Crop  
(Oats/Peas or  
Sudan)**

**Bare  
Ground**

## VEGETABLE PLANTING SCHEDULE

**EARLY**  
(before 5/31)

**MID**  
(6/1-6/30)

**LATE**  
(After 7/1)

**No  
Vegetable  
Crop this  
Season**

# Cover Crop Decision Making Tree

Existing Spring Field Conditions	Veg Planting Schedule	Actions/Cover Crops to Grow
Overwintered Cover Crop (Rye/vetch or Clover)	Early (before 5/31)	Not ideal--Relocate veggie crop if possible Grow Rye/Vetch to maturity, mow or disc to reseed Rye/Vetch Or mow Rye at flowering (can use for straw mulch), Drill Sudan Or Plant Oats/ Clover if we have a 2+ year rotation option
	Mid (6/1-6/30)	***Not ideal--Relocate veggie crop if possible*** Otherwise disc ASAP and tarp (Transplants only, don't attempt Drct Seeding/Ppots) Grow Rye/Vetch to maturity, mow or disc to reseed Rye/Vetch Or mow Rye at flowering (can use for straw mulch), Drill Sudan Grass Or Plant Oats/Clover if we have a 2+ year rotation option
	Late (After 7/1)	Terminate before 6/1, Best for transplanted crops If harvest is done before 10/1, sow rye and drill vetch in spring
	No Veg Crops this Season	Grow Rye/Vetch to maturity, mow or disc to reseed Rye/Vetch Or mow Rye at flowering (can use for straw mulch), Drill Sudan Grass Or Plant Oats/ Clover if we have a 2+ year rotation option
Winterkilled Cover Crop (Oats/Peas or Sudan)	Early (before 5/31)	Till ASAP (second week of April is ideal) Best for transplanted Crops Follow Veg Crops with Sudan Grass or Oats/Peas
	Mid (6/1-6/30)	Monitor for weeds If clean, wait, Till 3 weeks prior to planting If weedy, till at the same time as Early Spring crops and tarp Follow Crops with Oats/Peas or Rye/Vetch (depending on timing of harvest)
	Late (After 7/1)	Drill Oat/Peas ASAP, terminate 3 weeks prior to planting crop If harvest is done before 10/1, sow rye and drill vetch in spring
	No Veg Crops this Season	Drill Oat/Peas, grow to full maturity, mow or disc to reseed fall Oats/Peas Consider Oats/Clover if we have a 2+ year rotation option
Bare Ground	Early (before 5/31)	Ideal for Direct Seeded/Paperpot crops Follow Crops with Sudan Grass
	Mid (6/1-6/30)	Prep beds and tarp Follow Crops with Oats/Peas or Rye/Vetch (depending on timing of harvest)
	Late (After 7/1)	Sow Oats/Peas Cover, terminate 3-4 weeks before veg crop If harvest is done before 10/1, sow rye and drill vetch in spring
	No Veg Crops this Season	Drill Oat/Peas, grow to full maturity, mow or disc to reseed fall Oats/Peas Consider Oats/Clover if we have a 2 + year rotation option



# Cover Crop Calculator

	A	B	C	D	E	S	T	U	V	W	X	Y	Z	AA
1		2025		Acreage		OATS AND PEAS						RYE		
2						Seeding Rate for Oats LBS (Oats and Peas together)	Seeding Rate for Peas LBS (Oats and Peas together)	Enter 1 if we're cover cropping this block with Oats/Peas		Enter 1 if we're cover cropping this block with Oats/Peas		Seeding Rates for Rye	Enter 1 if we're cover cropping this block with Rye	Lbs of Rye needed 2016
3		Root 5 Farm	Acreage per block	# of beds	length of beds (ft)				LBS of Oats needed		LBS Peas Needed			
4						15 seeds/FT2	4 Seeds/FT2					LBS / Acre		
5						120lbs-200lbs/acre, 80% peas, 20% oats						90-160		
6						32	128					125		
7					100								0	0
8					100								0	0
9					200								0	0
10					230								0	0
11					200								0	0
12					100								0	0
13					200								0	0
14					100								0	0
15					100								0	0
16					175								0	0
17					225								0	0
18					125								0	0
19					355								0	0
20					100								0	0
21					100								0	0
22					100								0	0
23		Lower 2b	0.4	30	100							125	0	0
24		Lower 3a	0.22	17	100							125	0	0
25		Lower 3b	0.2	15	100	32	128	0		0	0	125	0	0
26		Lower 3c	0.22	17	100	32	128	0		0	0	125	0	0
27		Lower 4	0.42	16	200	32	128	0		0	0	125	0	0
28		Lower 5	0.45	17	200	32	128	0		0	0	125	0	0
29		Lower 6	0.34	26	100	32	128	0		0	0	125	0	0
30		Lower 7	0.24	14	100	32	128	0		0	0	125	0	0

**Add Plantings** Grid view

Filter by Fields Families: All Crops Varieties Status: All

Est. Last Frost: 5/12      Est. First Frost: 9/27

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

**All Unassigned**

Search for a crop or variety      Group By: Crop Name

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

### Middle 2

Row	Crop/Variety	Start Date	End Date	Duration
1	Broom Corn & Peas	May 15	Jun 15	30 days
2	Broom Corn & Peas	May 15	Jun 15	30 days
3	Broom Corn & Peas	May 15	Jun 15	30 days
4	Broom Corn & Peas	May 15	Jun 15	30 days
5	Broom Corn & Peas	May 15	Jun 15	30 days
6	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
7	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
8	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
9	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
10	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
11	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
12	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
13	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
14	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
15	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
16	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
17	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
18	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
19	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
20	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days
21	Peppers, Hybrid, 200 seed B	May 15	Jul 15	60 days

**Buckwheat**

6/28      7/5      7/5      7/17      7/31      9/4

**Cabbage**

7/11      8/11

**Clover**

4/3      4/3      4/3      4/3      5/17      5/17      6/12

**Cover Crop Mix**

Winter Rye and Soybean Mix > 200 seed B

**Field Pea**

4/3      4/3      4/3

[Send feedback](#)







# OATS & PEAS

## BENEFITS:

- Germinate and grow well at lower temperatures
- Great for seeding in early spring
- Dense knee high growth by mid-June
- Break down easily when you till them under



# OATS & PEAS



## BENEFITS

- Leave a thick mulch, protecting the soil over the winter
- Breaks down easily, allows us to direct seed an early season crop.

## DISADVANTAGES:

- Need to establish before 8/30, no late fall seeding
- Only produce (1-4 T/A) organic matter





# OATS & PEAS

**Good at reseeding themselves mid season**

**Let them grow to maturity, mow right before a heavy rain**

**Less tillage, save \$ on seed**



# CLOVER

A man and a child are walking away from the camera through a vast, green field of clover. The man is wearing a dark jacket and the child is wearing an orange jacket. In the background, there is a dense line of trees with some autumn-colored foliage, and the sky is a clear, bright blue.

## BENEFITS:

Long multi-year cycle

No soil disturbance for 2+ years

Nitrogen fixing


Mowable

## DISADVANTAGES:

Difficult to establish, very small seed, very slow growing

Difficult to terminate, slow turn around to veg planting (we usually plant oats/peas first)



A close-up photograph of a field showing a mixture of mature oat plants and a dense carpet of green clover. The oat stalks are thin and upright, topped with golden-brown, seed-filled spikelets. The clover consists of small, rounded green leaves that form a thick mat on the ground. The overall scene illustrates the concept of using oats as a nurse crop to support the growth of clover.

Oats as nurse crop for clover



# CLOVER

A wide-angle photograph of a lush green field filled with numerous small, white, spherical clover flowers. The field stretches towards a line of dark green trees in the background. Above the trees, a bright blue sky is filled with large, fluffy white cumulus clouds. The overall scene is bright and sunny.

**Excellent insect forage**  
**Time mowing after flowering**



# T.A.R.A.

(timothy, alsike clover, red clover, and alfalfa)

## BENEFITS:

- Mix of varieties, can establish in a variety of weather conditions.
- 4 tons to the acre dry matter
- 60 pounds N to the acre
- No soil disturbance for 2 years

## DISADVANTAGES:

- Slow to establish
- Grows lots of woodchucks







**T.A.R.A.**

**(timothy, alsike clover, red clover, and alfalfa)**

**Mow once or twice each season to prevent weeds going to seed**



# RYE & VETCH

## BENEFITS

- Excellent cold tolerance, survives winter, jump starts with early growth
- Can seed after fall harvested crops (October 10th)
- Second highest dry matter producer (2-6 tons/ Acre)
- Nitrogen fixing (110 Pounds per Acre)
- Reseeds easily after allowing to grow to maturity
- Continues to grow after mowing (control weed seed)
- Vetch makes good insect forage



# RYE & VETCH



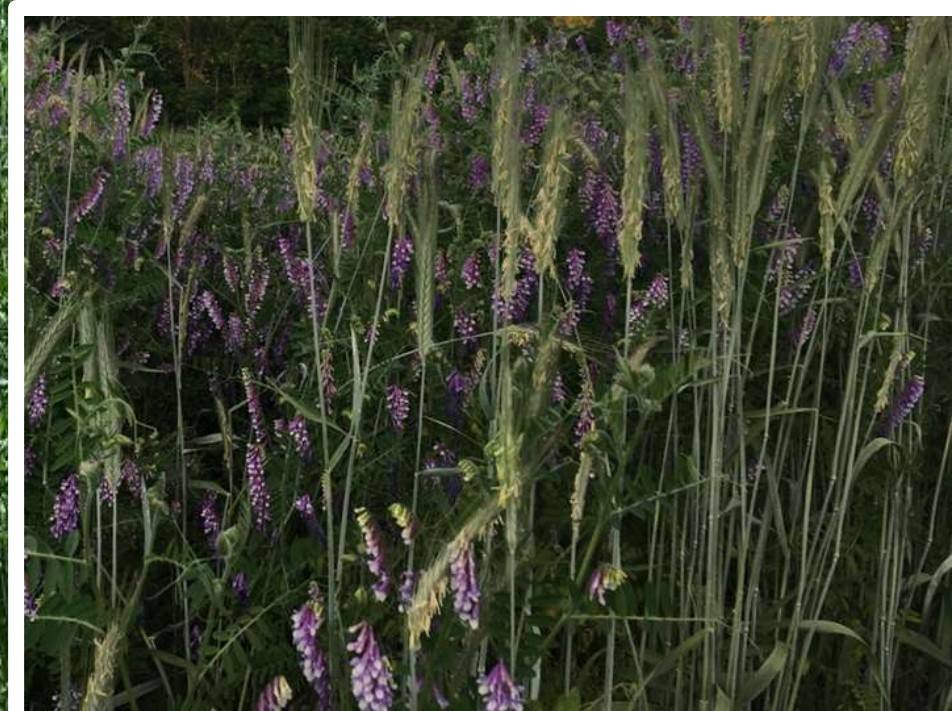
**Great for green straw production**



# RYE & VETCH

## DISADVANTAGES:

- More difficult to incorporate
- Needs a wider window from cover to vegetable crop
- Can become very dry and persistent, leaving material that can bridge seeding and paperpot equipment





# SORGHUM SUDAN GRASS

## **BENEFITS:**

- Excellent organic matter production (2-9 tons to the Acre)
- Loves hot and dry parts of the year
- Shades out weeds quickly
- Can be mowed to tiller the roots and suppress weeds.
- Winter kills

## **DISADVANTAGES:**

- Need some horsepower to mow and incorporate because it can grow to 8 feet tall





# BUCKWHEAT



## BENEFITS:

- Short season fast germinating cover crop
- Easy and quick to establish and germinate even in hot dry conditions with less than ideal tools
- Easy to incorporate, breaks down quickly so you can plant a vegetable crop in summer or fall
- Good catch crop for phosphorus and other nutrients
- Good forage for insects

## DISADVANTAGES:

- Small contribution to building organic matter (other than reduced tillage, replacing stale seeding)
- Seed is quick to mature after letting it flower for insects







# ANY QUESTIONS?





# Equipment

**Seeding**

**Cover Crop Incorporation**

**Soil Preparation**





# GRAIN DRILL GREAT PLAINS 3P600















