

# Alternative to Rye?

## Testing winter camelina in the field

Ruth McCabe  
Emery Davis  
Heartland Co-op





# Introductions!



# The Next Hour...

## Ruth – Agronomic Perspective

- What is winter camelina?
- Why choose it over rye?
- How to plant? Kill? Relay Crop?
- Agronomic takeaways?

## Emery – Farmer Perspective

- What interested me in camelina?
- First year experiences?
- Major Takeaways?
- Other farmer experiences?





# Ruth – Agronomic perspective

## Forever Green Initiative

### Developing New Crops for

- High efficiency agricultural systems
- Improved soil and water quality
- New economic opportunities for farmers, industry, and rural Minnesotans



The Big Question: Is winter camelina a viable alternative to cereal rye ahead of corn as an over wintering cover crop?



# Ruth – What is winter camelina?





# Ruth – Why choose camelina over rye?

- Over wintering crop that isn't a small grain!
- Don't need as much seed – NRCS cost share minimum is 4 lbs
- If it's like other brassicas that I've worked with...
  - Should be easy to kill with fast decomposition
  - Low C:N ratio – meaning it won't tie up N in the soil as it decomposes





# Ruth – How to plant it?

- NRCS minimum for cost share is 4 lbs per acre by itself
- Use higher rate if you have goals other than a living root in the soil over winter
- Planting solo?
  - Drilling is your best bet – using a small seed box
  - Canola meter in an air seeder works too – but will seed more than 4 lbs
  - Gandy air seeder on a combine?





# Ruth – How to plant it?



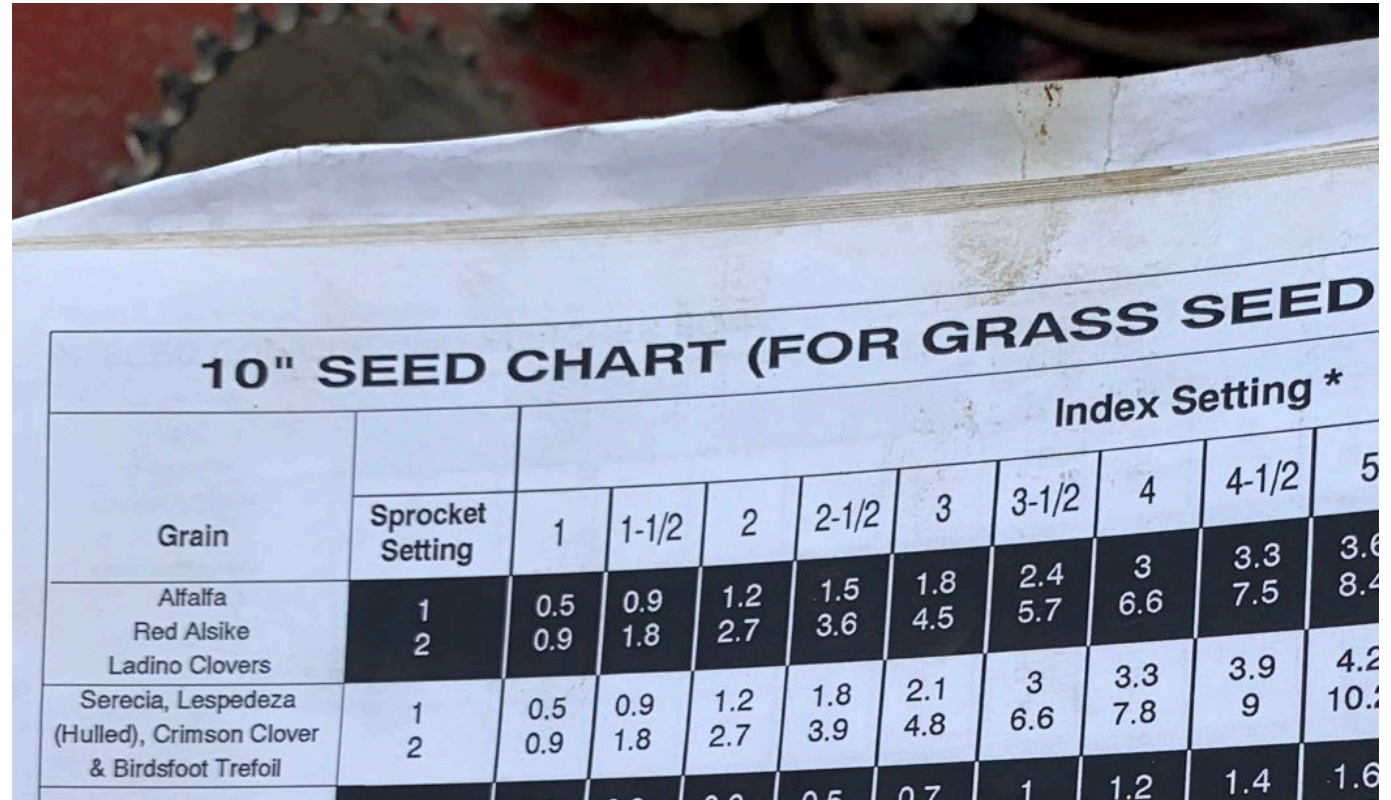
- Mixing with another cover crop?
  - Drilling still your best bet! Use a small seed box for the camelina
  - Broadcast or high clearance can work – recommend using a micro bin
  - Aerial application not recommended
- Bottom line: Does not mix well with large seeded species
  - Small, dense, and smooth! Settles to the bottom after 5 minutes of agitation



# Ruth – How to plant it?



- Krause 5515 No Till Pro Drill – 30 years old?
- Super leaky!
- 1 lb alfalfa setting on this equaled about 4 lbs camelina



Grain	Sprocket Setting	Index Setting *								
		1	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5
Alfalfa	1	0.5	0.9	1.2	1.5	1.8	2.4	3	3.3	3.6
Red Alsike	2	0.9	1.8	2.7	3.6	4.5	5.7	6.6	7.5	8.4
Ladino Clovers										
Serecia, Lespedeza	1	0.5	0.9	1.2	1.8	2.1	3	3.3	3.9	4.2
(Hulled), Crimson Clover & Birdsfoot Trefoil	2	0.9	1.8	2.7	3.9	4.8	6.6	7.8	9	10.2
					0.5	0.7	1	1.2	1.4	1.6



# How to plant it?





# Ruth – How to plant it?

- JD 750 drill with small seed box
- 15 ft drill at 7.5 inch spacing
- Smallest setting was 4 -5 lbs camelina per acre
- Also a bit leaky



*Operating the Machine*

**POUNDS PER ACRE (KILOGRAMS PER HECTARE) FOR DRILLS WITH 7-1/2-IN. (191 MM) SPACED GRASS SEED ATTACHMENTS**

	1	2	3	4	6	8	10	12	14	16
<b>Notches on Grass Seed Index</b>	2 (2.2)	3.5 (3.9)	6 (6.7)	8.5 (9.6)	13 (14.6)	18.5 (20.8)	23 (25.9)	28 (31.5)	34 (38.2)	40 (45)
<b>Alfalfa; Red Alsike and Ladino Clovers</b>	1.5 (1.7)	4 (4.5)	6.5 (7.3)	9.5 (10.7)	15.5 (17.4)	22 (24.7)	29 (32.6)	36.5 (41)	44.5 (50)	53 (59.6)
<b>Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil</b>	1	2	3	5.5 (6.2)	8 (9)	10.5 (11.8)	13 (14.6)	16 (18)	19.5 (21.9)	



# Ruth – How to kill it?

Not a tough plant – any herbicide that kills broadleaves will kill this



Sprayed May 10<sup>th</sup>  
Photos taken May  
13<sup>th</sup> 2022



# Ruth – How to relay crop it (with soybeans)?





# Ruth – Agronomic Takeaway: TINY SEED



~450,000 seeds per lb, roughly half the size of an untreated alfalfa seed



# Ruth – Agronomic takeaway: TINY SEED



~450,000 seeds per lb, roughly half the size of an untreated alfalfa seed



# Ruth – Agronomic takeaway: Don't plant too early!



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## Winter and summer annual biotypes of camelina have different morphology and seed characteristics

Alex Wittenberg <sup>a</sup>, James V. Anderson <sup>b</sup>, Marisol T. Berti <sup>a</sup>

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<https://doi.org/10.1016/j.indcrop.2019.04.036>

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### Abstract

Central Iowa: October!



# Ruth – Agronomic takeaway: Minimal fall biomass

Camelina planted October 5<sup>th</sup>, 2021  
Rye planted about two weeks later  
Pictures taken November 3<sup>rd</sup>, 2021





# Ruth – Agronomic takeaway: No weed control...



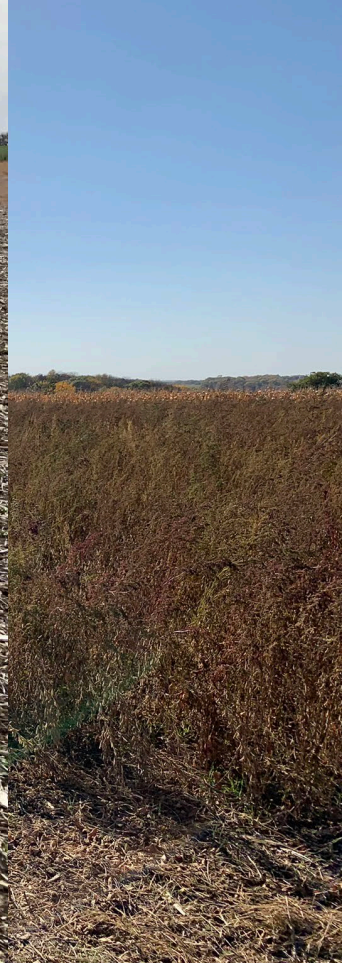
Picture taken November 3<sup>rd</sup> 2021



Same corner – picture taken April 9<sup>th</sup> 2022



# Ruth – Agronomic takeaway: No weed control...



Same corner – picture



# Ruth – Agronomic takeaways...

- Haven't seen sensitivity to spring applied residual herbicides yet
- If planted too late, seed will only grow in the spring
- NRCS cost share minimum seeding rate is 4 lbs broadcast
  - No weed control
  - No erosion control
- Can plant as late as Nov. 5<sup>th</sup> – grows, forms a small rosette, comes back in spring
- Really decomposes very quickly – one week and it's gone



# Emery – Farmer Perspective

- What interested me in camelina?
- First year experiences?
- Major Takeaways?





# Emery: First Year Experiences

- Harvested Soybeans Oct. 19<sup>th</sup>, 2021
- Planted cover crop mix Oct 20, 2021
- 2lbs per acre camelina and 45lbs/ac rye
- Planted with a Case IH 5400
- Terminated April 28, 2022 with glyphosate and 2-4D
- Planted Corn May 11, 2022



Oct 20, 2021





# Close up of Case IH 5400 Drill



Raised Coulters Cart



# Backside of the drill





# Small seed box setting chart

GRASS SEED SOWING CHART FOR CASE INTERNATIONAL 8 INCH (203mm) DRILL

KGS PER HECTARE							POUNDS PER ACRE									
8	10	12	14	16	18	20	INDICATOR SETTING	2	4	6	8	10	12	14	16	
28	34	41	48	56	62	70	Alfalfa	6	12	18	25	30	37	43	50	
28	34	41	48	56	62	70	Alsike or White Clover	6	12	18	25	30	37	43	50	
7	10	12	15	17	19	21	Canadian Blue Grass		3	4	6	9	11	13	15	1
11	13	17	20	24	27	30	Canary Grass	2	4	6	10	12	15	18	21	2

Rate was off the chart on the low side if going by Alfalfa setting. Ended up eyeballing it.



# Seed cup sprocket on small seed box



I had seed cup sprocket barely showing (1/8in).



# Drop tubes, disc openers, and press wheels





# February 21, 2022 – Winter camelina progress





April 2<sup>nd</sup>, 2022





# Spring 2022 Termination – April 28, 2022



50.0000	ACR	CUSTOM SPRAY W/WATER
19.5311	GA	ABUNDIT EDGE, ★ GAL
100.0000	LB	AMM.SULFATE, # (21-0-0-24)
4.6875	GA	2-4D LV6 ALLIGARE, BULK GAL
4.6875	GA	SAVVY, GAL
DD - WEST PLACE 60 ACRES		
4/28/22		

★ Glyphosate



# Deader than a bag of hammers...



May 11- corn planting



Really dead.



May 11- corn planting



# May 11 in fence line



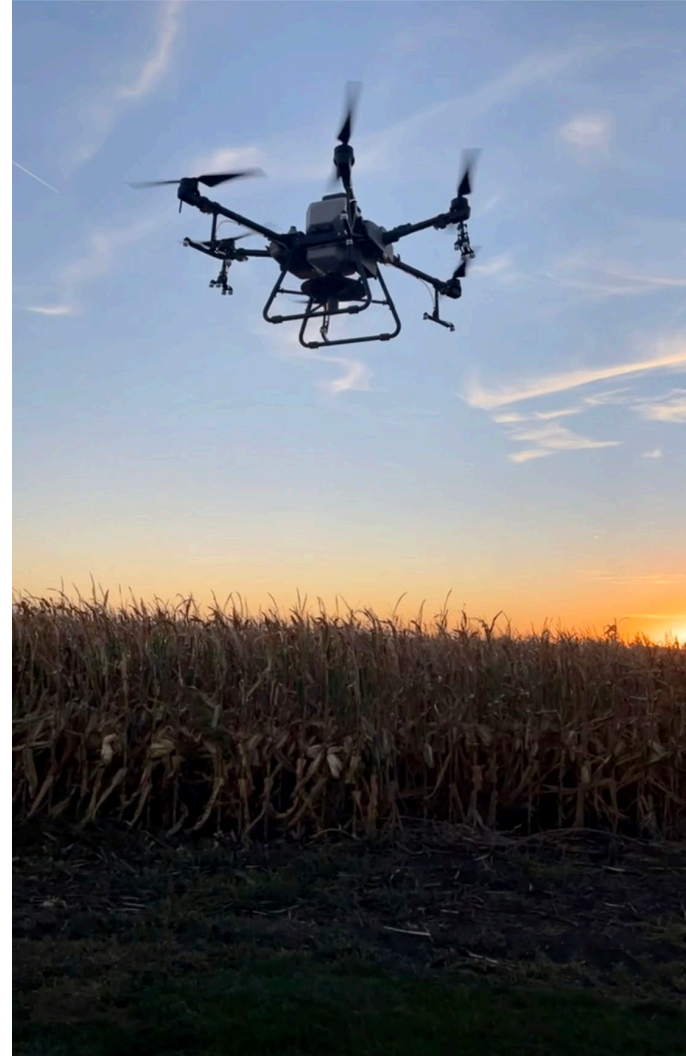


# Emery – Major Takeaways

- The seed is SUPER small
  - Be a bit creative when planting
- The growth was unimpressive, especially in the fall
  - I thought it kept pace with the rye fairly well in the spring
- It was winter hardy (alternative to a grass CC)
- Camelina dies easily and breaks down fast
  - This is good before corn
- .... Low seeding rate could be a plus for drone or air seeders, reducing the need to fill seed...



# Emery – Other farmer experiences





# Thank you!



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# Weed control...



August 5th



# Weed control...



June 24, 2022



# Camelina ≠ weed control...





# One slide presentation...

- If you're looking for a way to diversify your cover crops in a corn bean rotation...
- And you don't want to do a multi-species mix...
- Use rye ahead of soybeans
- Use camelina ahead of corn