Effect of Cover Crop Blend on Subsequent Dryland Corn Yield

2014 Crop Year
Justin Knopf, Gypsum, Kansas

2015 Kansas Ag Tech Conference

Rationale

- Cover crops may offer an opportunity to grow biomass to improve soil health and reduce soil erosion potential in central Kansas
- Cover crop may fit well during “fallow” period between wheat and following spring crop (Wheat>CC>Corn>Soybeans)
- Not fully understood are the potential impacts of growing a cover crop on the subsequent crop and cropping system

Objectives

- Use on-farm research techniques to evaluate the effects of cover crop blend on subsequent dryland corn yield
- Monitor weed pressure differences among treatments
- Improve ability to efficiently and effectively carry out on-farm research
- Improve ability to utilize AgStudio in on-farm research

Materials and Methods

- Treatments
  - 1 – No-Till Fallow
  - 2 – Cover Crop Blend
- Each treatment randomized and replicated three times

CC Blend–from Green Cover Seed

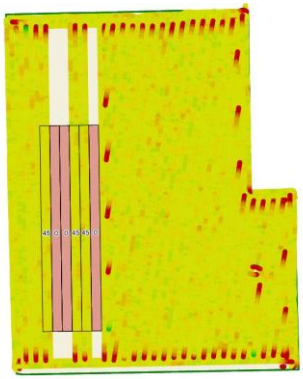
Species	Lbs/ac
Legumes	
Common Vetch	4.0
Winter Pea	10.0
Grasses	
Winter Oats (Bob)	15.0
Spring Forage Barley	15.0
Brassicas	
Nitro Radish	1.0
Ethiopian Cabbage	0.8
Broadleaf Mustard	1.0

Materials and Methods

- Cover Crop Seeding Date – Sept 6, 2013
- Cover Crop Termination by Frost
  - Termination date varied among species
- Corn Seeding – May 10, 2014
- Corn Harvest – Sept 18, 2014
- Growing Season characterized by adequate moisture through pollination, then very dry through grain fill

Materials and Methods

- Strip plot design
- 3 replications of two treatments
- Treatment strips 90’ wide
- Harvested with 8 row corn head (20’)

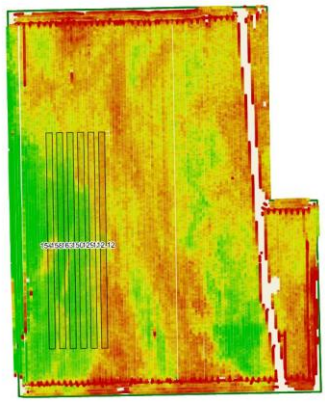


Materials and Methods

Materials and Methods

Analysis

- Yield data cleaned with ARS Yield Editor
- Buffered treatment strips (plots) by ½ header width to ensure that only full passes of treatment yield data were included



2014 Corn Yield Results

Plot	Rep	Treatment	Yield (bu/ac)
101	1	Cover	154.5
102	1	Fallow	158.9
201	2	Fallow	163.1
202	2	Cover	150.2
301	3	Cover	129.3
302	3	Fallow	112.1

Analysis

- Analysis of Variance was conducted with the MIXED procedure in SAS 9.2
- P-value of 0.05 criteria for significance

2014 Corn Yield Results

Treatment	Saline
	bu ac^{-1}
Multi-Species Cover	144.67
Fallow	144.70
ANOVA P>F	
Source	
Treatment	0.9974
LSD = 0.05	ns

Conclusions

- Cover crop had no impact on subsequent corn yield
- Winter annual weed pressure was reduced in cover crop treatment compared to fallow
  - Mostly henbit and late emerging vol wheat
- Would have liked to seeded cover crop earlier to allow more time for growth
  - Balance with vol wheat/WSMV concerns

Conclusions

- Utilizing cover crop resulted in net economic loss in short term
- Will continue to work with cover crop in this portion of the rotation on limited acres, looking for soil health, residue, agronomic, and economic benefits

Thank You

- KARTA for grant to support this research
- Lucas Haag
- Questions?