

FALLOW ELIMINATION STUDY



15th Annual Kansas Ag Research (KARA) Conference
January 19-20, 2012
Salina, KS

Why Eliminate Fallow?

- ❑ Conventional summer fallow is terribly inefficient at converting precipitation into soil moisture (less than 30%)
 - Every tillage pass loses 0.5" to 1.0" of soil moisture
 - With little to no surface residue, soil moisture evaporates quickly
 - Low residue equals low infiltration rates which lead to increased surface run off during big rain events
- ❑ Removing tillage from the conventional summer fallow equation increases soil moisture, but creates other problems
 - Without tillage to create a dust mulch, fallow ground gets extremely hard and dry on the surface
 - It takes a timely rain to get wheat established
- ❑ *Hypothesis:* A cover or cash crop planted during the traditional fallow period will increase precipitation efficiency and ultimately improve yields and profitability in our traditional cropping systems in Western Kansas.

Green Fallow for the Central Great Plains

Research conducted at Tribune from 1990-1994

LAST SENTENCE FROM ABSTRACT:

"Although green fallow is too detrimental to subsequent crop yields to be recommended in the Central Great Plains, dryland legumes have potential as forage crops."

Alan J. Schlegel and John L. Havlin
Published in *Agron. J.* 89:762-767 (1997)

Green Fallow for the Central Great Plains

Research conducted at Tribune from 1990-1994

FROM THE SAME RESEARCH:

"[Subsequent] Grain yield was not significantly reduced when vetch growth was terminated in early June, but further vetch growth tended to decrease subsequent wheat yields compared with conventional wheat-fallow."

Alan J. Schlegel and John L. Havlin
Published in *Agron. J.* 89:762-767 (1997)

Cover/Cash Crops Examined

- ❑ Peas
 - Planted 3-7-09 – Harvested 7-2-09
- ❑ Oats
 - Planted 2-16-09 – Harvested 7-7-09

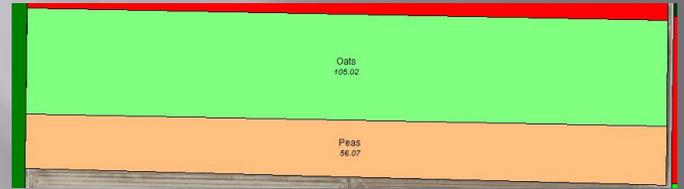
Peas



Oats



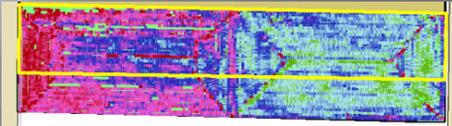
2009 Peas vs Oats



2007 Wheat Yield

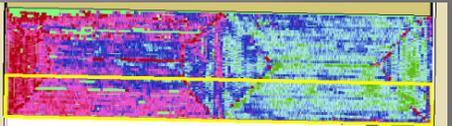
Data Values	
Ave Yield	54.54
Ave MC	11.70
Acre	94.13
Wheat(Hrd Rd Wtr) (bu/acre)	
21	37 54 70 87

2009 Oat Ground



Data Values	
Ave Yield	54.01
Ave MC	12.15
Acre	60.43
Wheat(Hrd Rd Wtr) (bu/acre)	
21	37 54 70 87

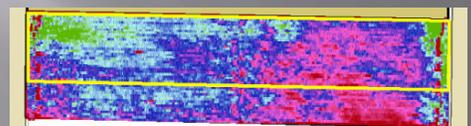
2009 Pea Ground



2008 Milo Yield

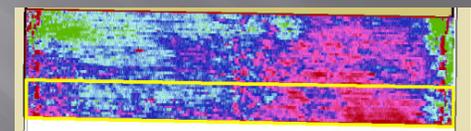
Data Values	
Ave Yield	63.33
Ave MC	11.41
Acre	102.28
Sorghum (bu/acre)	
15	38 61 84 107

2009 Oat Ground



Data Values	
Ave Yield	52.36
Ave MC	11.99
Acre	58.42
Sorghum (bu/acre)	
15	38 61 84 107

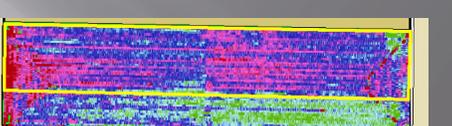
2009 Pea Ground



2010 Wheat Crop

Data Values	
Ave Yield	48.46
Ave MC	10.13
Acre	105.83
Wheat(Hrd Rd Wtr) (bu/acre)	
32.8	42.4 52.1 61.7 71.3

2009 Oat Ground



Data Values	
Ave Yield	57.69
Ave MC	9.69
Acre	56.09
Wheat(Hrd Rd Wtr) (bu/acre)	
32.8	42.4 52.1 61.7 71.3

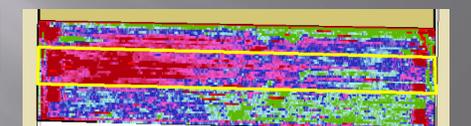
2009 Pea Ground



2011 Milo Crop

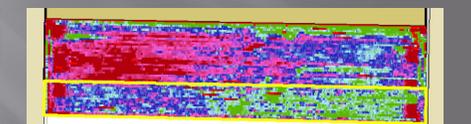
Data Values	
Ave Yield	25.77
Ave MC	14.10
Acre	57.47
Sorghum (bu/acre)	
0	20 39 59 78

2009 Oat Ground



Data Values	
Ave Yield	48.60
Ave MC	11.07
Acre	56.75
Sorghum (bu/acre)	
0	20 39 59 78

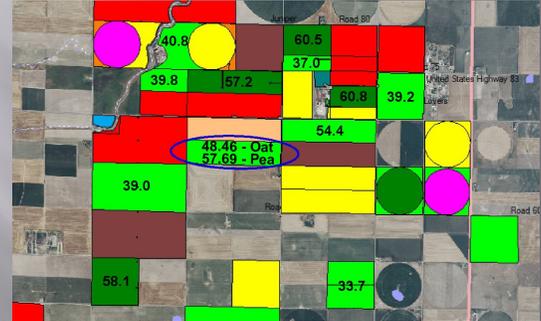
2009 Pea Ground



2009 Comparison



2010 Wheat Yields



Light green was continuous crop wheat. Average Yield = 46.2 bu/ac
Dark green was summer fallow wheat. Average Yield = 58.7 bu/ac

2011 Milo Yields



Red was milo in 2011. Yields increased significantly moving to the North.

2009 Oats

- ❑ Great spring weather in 2009 for oats, but disappointing yield and test weight
 - Yield 34.9 bu/acre
 - Test Weight 36.2 – needed to be over 40 for horse feed
 - Marketed to our feed yard
- ❑ Provided great residue and seed bed for following wheat, but wheat yield stunk!

2009 Peas

- ❑ Planted 3-7-09 - Harvested 7-2-09
 - ❑ 57 acres
 - ❑ Seed & inoculant = \$62.80/acre
 - ❑ Drilling = \$15/acre
 - ❑ Herbicide (Spartan) = \$14/acre
 - ❑ Spraying = \$4.50/acre
 - ❑ Harvest = \$45/acre
 - ❑ Total Cost = \$141.30
 - ❑ Yield = 25.34 bu/acre
 - ❑ Breakeven = \$5.58/bu

2010 Peas

- ❑ Planted mid-March 2010 harvested Early July 2010
 - ❑ 480 acres less 160 acres terminated in May
 - ❑ Seed (3 bu/acre) = \$30/acre
 - ❑ Inoculant (0.15/lb seed) = \$8.07/acre
 - ❑ Herbicide = \$15/acre
 - ❑ Drilling = \$15/acre
 - ❑ Spraying = \$4.50/acre
 - ❑ Harvest = \$45/acre
 - ❑ Total Cost = \$117.57/acre
 - ❑ Yield = 21.3 bu/acre
 - ❑ Breakeven = \$5.52/bu
- ❑ Two fields had stand issues (herbicide carryover) and one field had poor pod development. We are guessing the heat shut off our pod development.

2011 Peas

- ❑ Dry/hot spring = No Pea Harvest
- ❑ Peas provided some residue until wheat drilling, but did NOT provide enough residue to keep moisture at soil surface to ensure stand of wheat.
- ❑ Pea/Spartan combination nearly eliminated kochia problems
- ❑ In some instances, the drought stressed (8" - 15") pea plants tried to blow like tumbleweeds during wheat planting

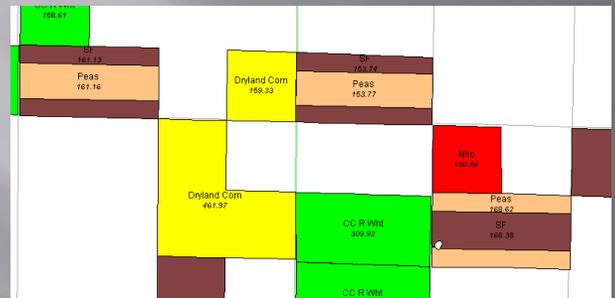
Final Thoughts

- ❑ The residue from the cover crops terminated prior to June 1 (insurance deadline) didn't sufficiently keep the ground covered until wheat planting
- ❑ Pea harvest is a challenge
 - ❑ Pea harvest can interfere with wheat harvest
 - ❑ Storage is needed for peas
 - ❑ Combines don't distribute residue evenly
 - ❑ Pea residue disappears by wheat planting and the ground can still "bake out"
- ❑ How much nitrogen is produced above and below ground from the peas? Should we consider not harvesting peas at all?

Final Thoughts cont.

- ❑ Choosing the right cover crop is important to maintain benefits of fallowing ground.
- ❑ Planting peas had minimal effect when compared to fallow on following crops yields.
- ❑ Oats had the same affect as continuous row-cropping on following crop yields.

Plan for 2012



Questions?

