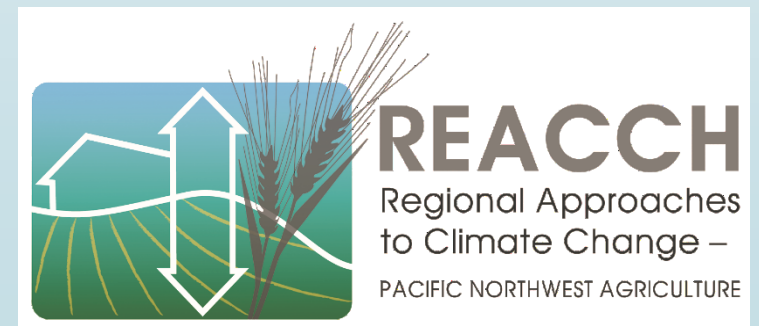


Growing tall cereal crops and  
harvesting them with a stripper  
header to alter the microclimate  
at the soil surface and conserve  
soil water

Lauren Port, Frank Young, Bill Pan



# Wind Erosion



krem.com



Frank Young

# Phase I:

(1995-2000)

- **Objective:** develop an economically sound and agronomically feasible no-till spring crop production system that replaces or supplements traditional WW/Fallow.





## Phase II:

(2002-2007)

- **Objective:** Examine the agronomic and economic feasibility of other alternative crops for the WW-fallow region.
- Investigated four rotation systems that included two crop rotations per system.



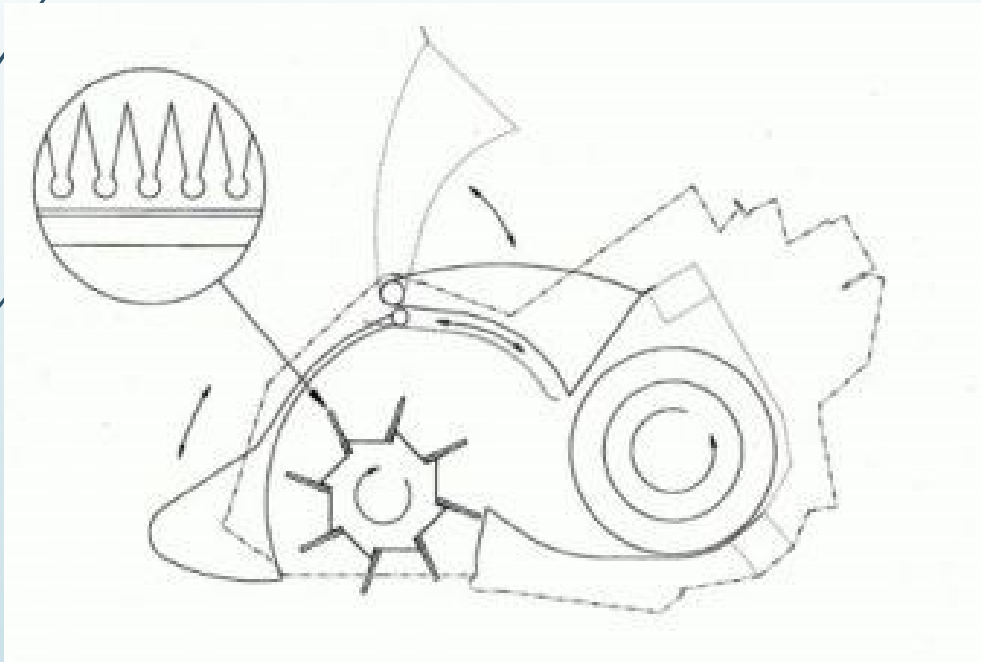
# Summary

- Annual cropping not economically feasible
  - Cereals
  - Broadleaf crops
- Leaves question of “better fallow”
  - Ralston building no-till residue

# Research Questions

1. What are the impacts of tall cereal varieties on crop residues, soil moisture, and SOC?
2. Is it possible to seed directly into the tall standing stubble resulting from our crop variety and harvest choices, and how is establishment influenced by the residue?

# Stripper Header Mechanism



Shelbourne Reynolds Inc.





# Stripper Header





# Standing Stubble

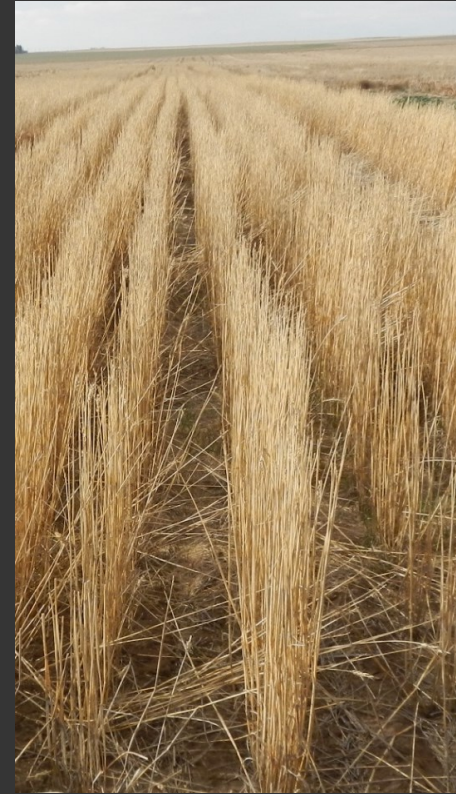




# Residue Heights and Tillage



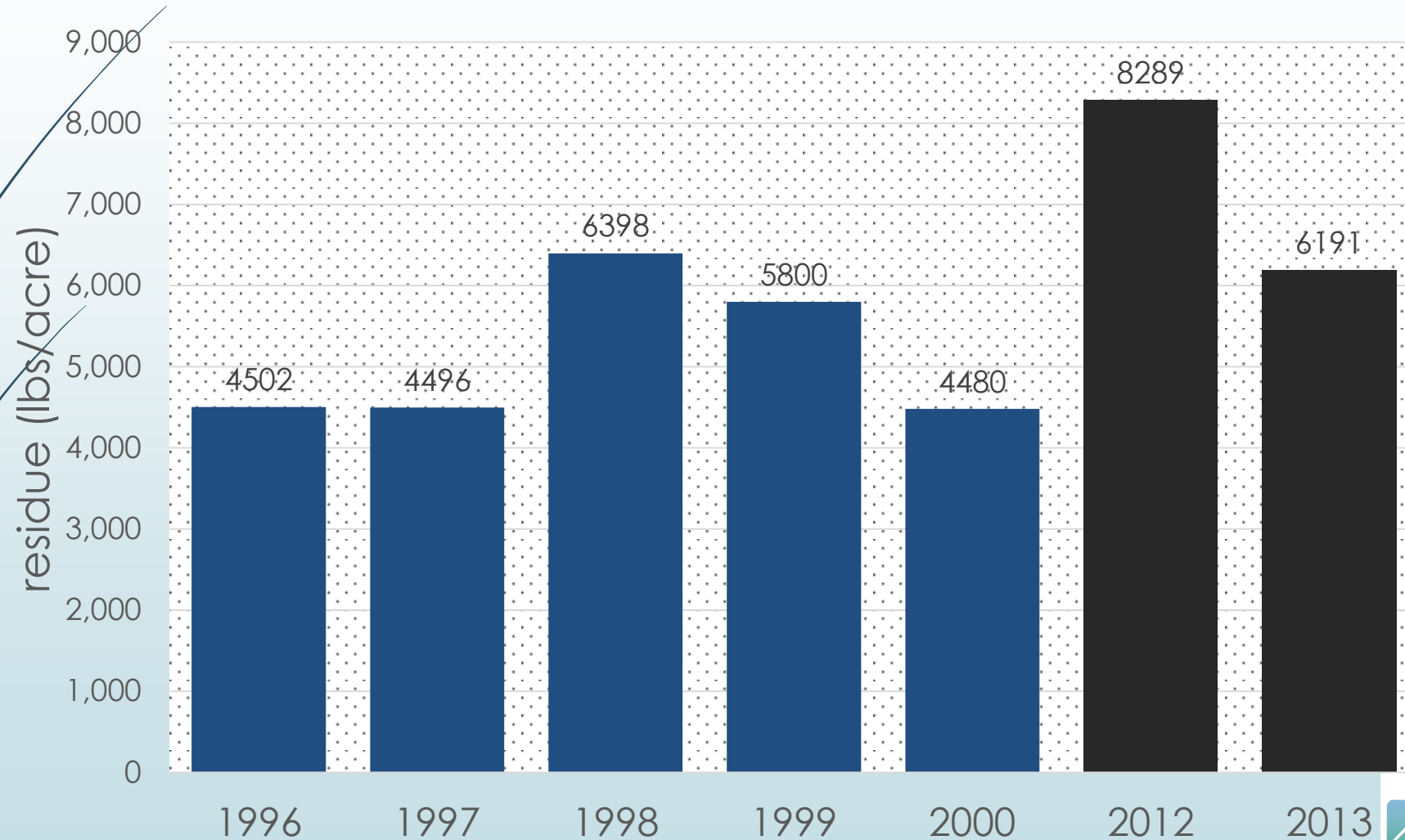
**Chemical Fallow Following Stripper Header (L)  
and Cutter Bar (R) Triticale**



**Stripper Header Chemical Fallow (L) and Cutter Bar  
Reduced Tillage (R) Winter Wheat**



# Winter Wheat Residue Produced





# Field Operations



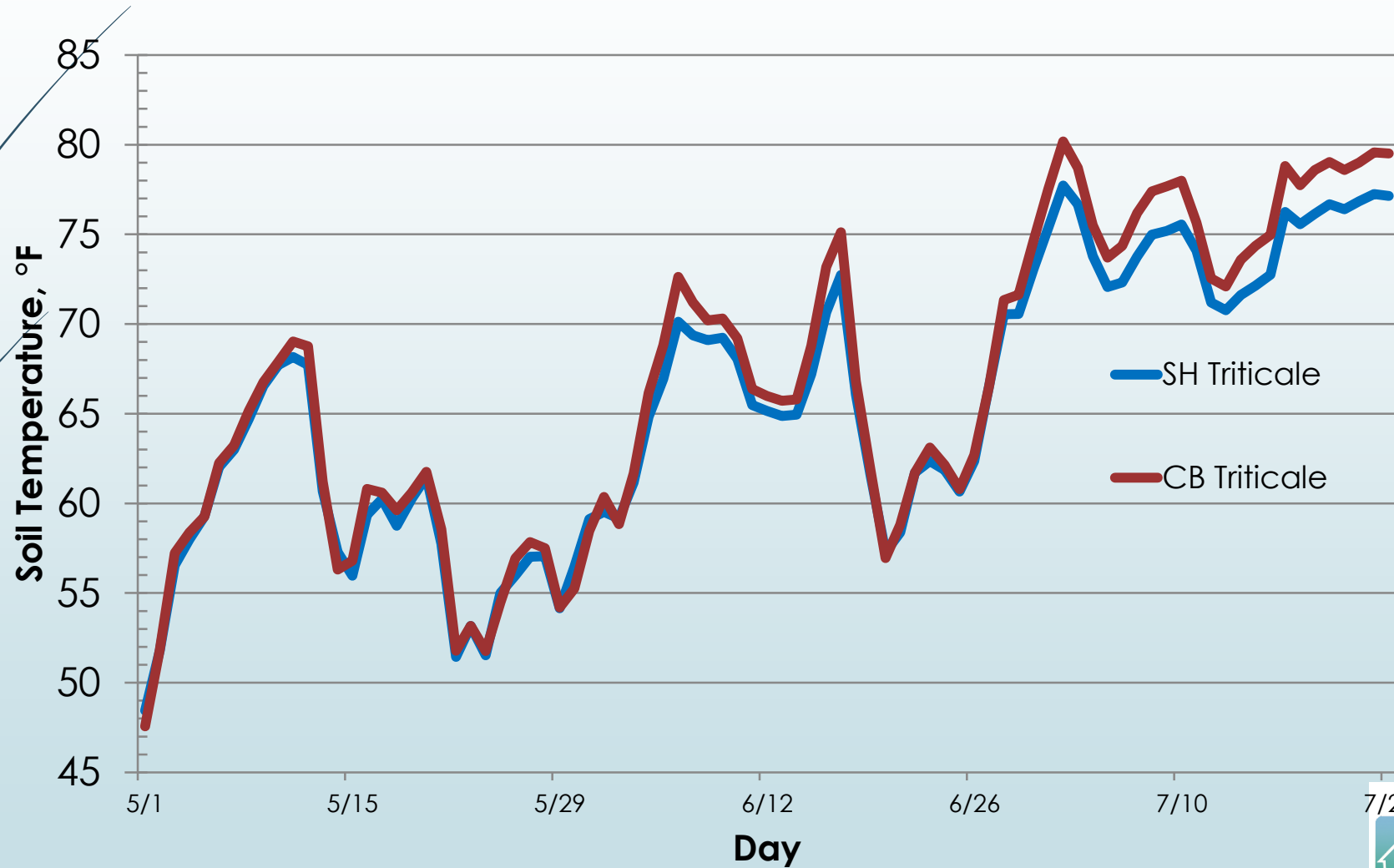


# Benefits of Increased Standing Residue

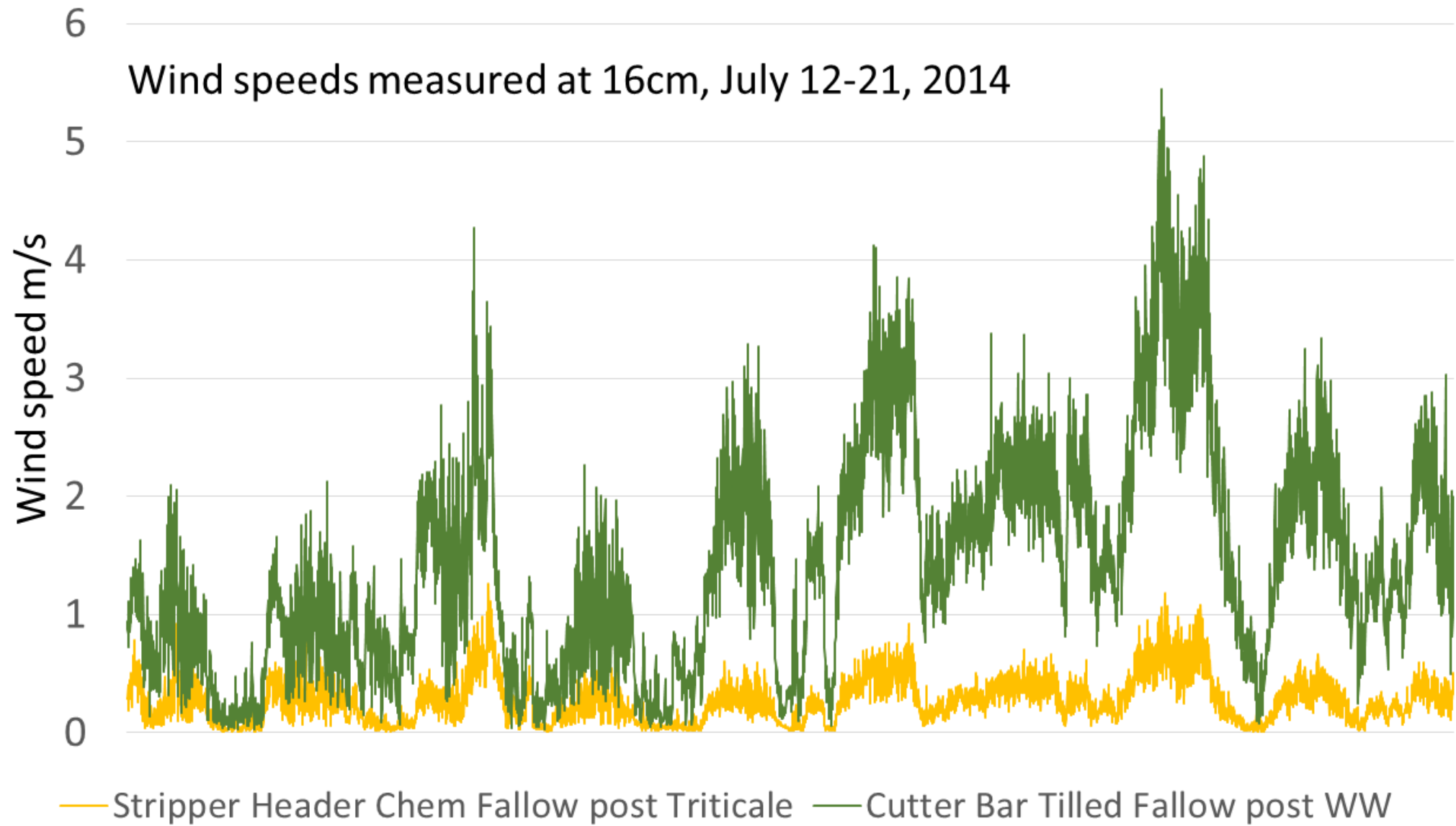
- Temperature moderation
- Wind speed suppression
- Reduced weed growth?



# Average Daily Soil Temperature







# Weed Reduction?



Cutter Bar



Stripper Header



# Sum it up...

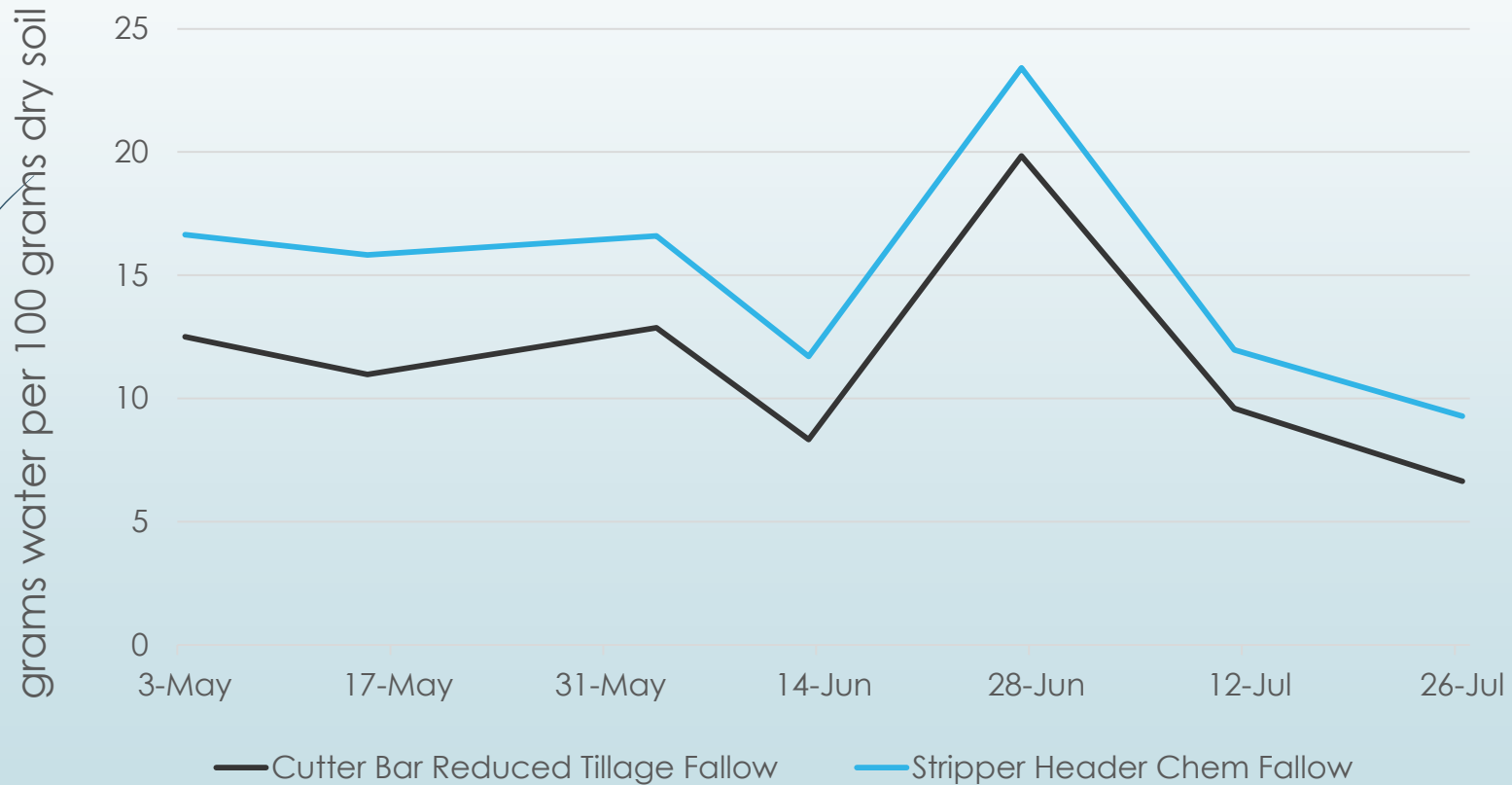
- Lower temperature, wind speeds, and fewer weeds lead to...
- More soil water!



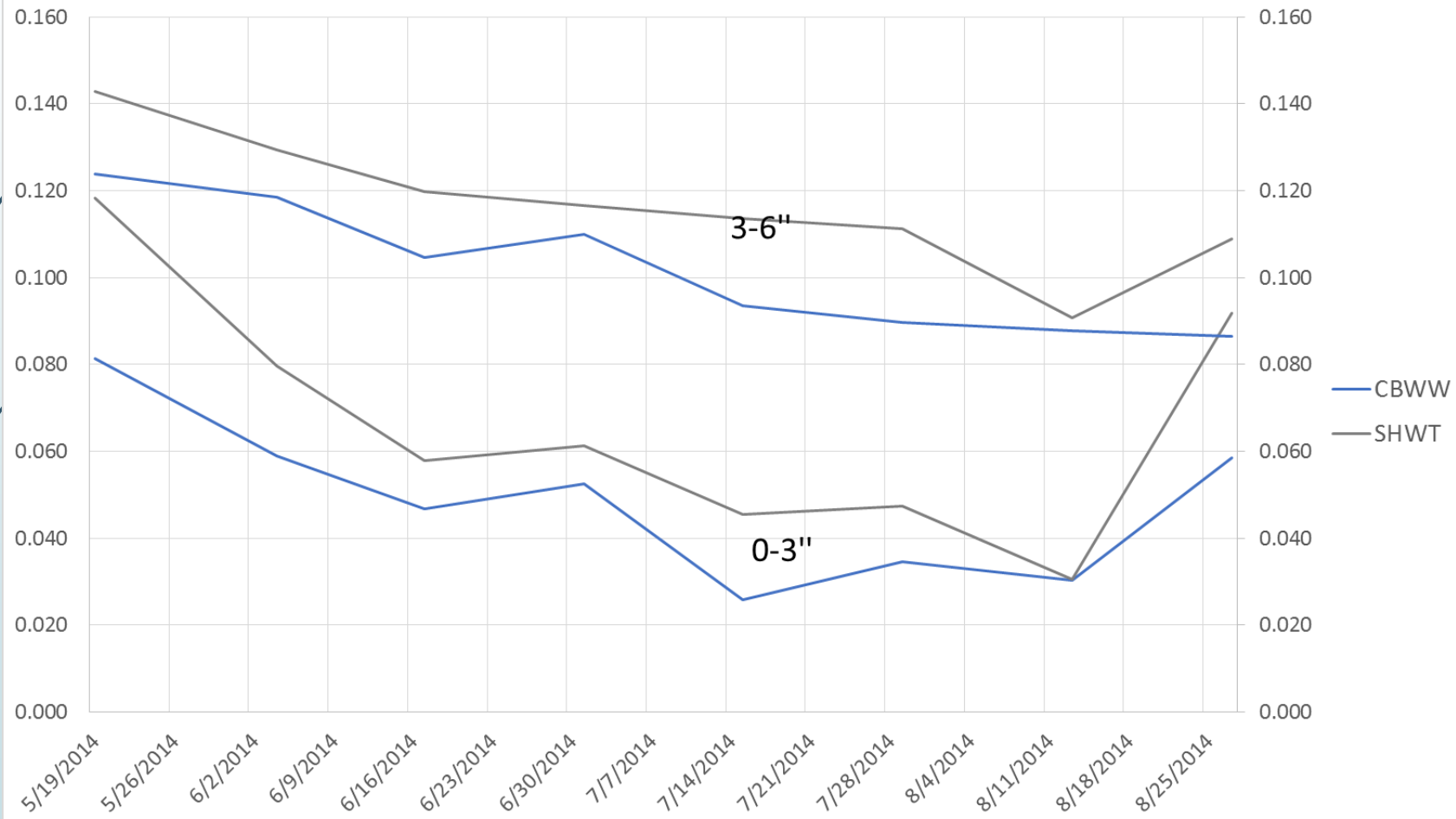


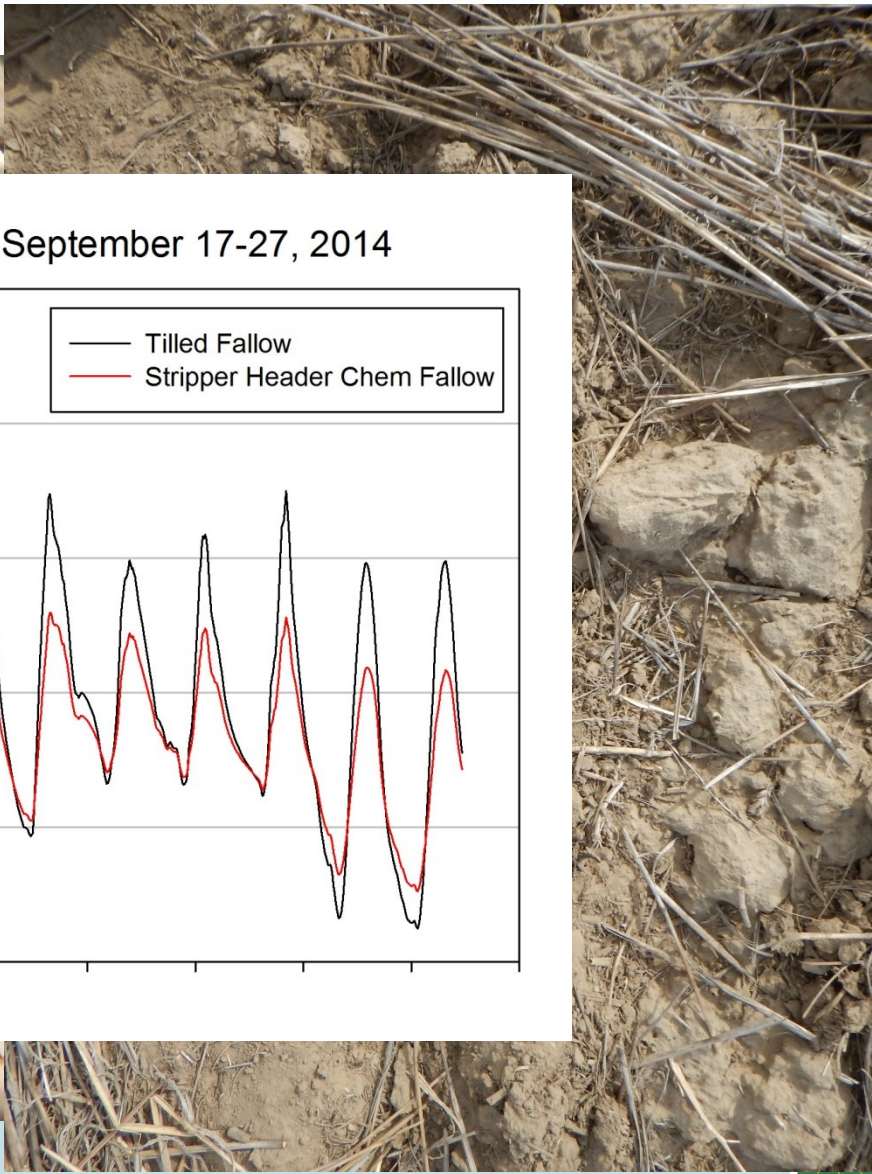
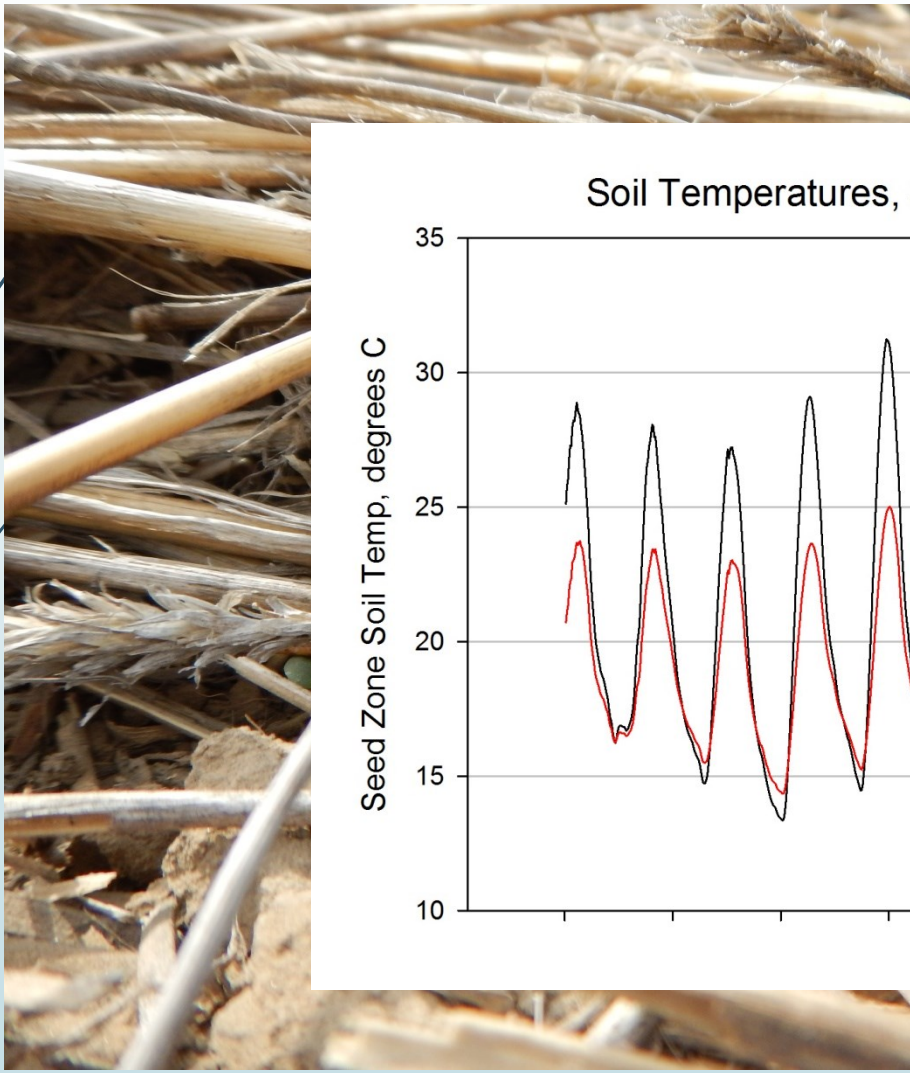
# Soil moisture over time

Wheat-Fallow Soil Moisture , 0-3"

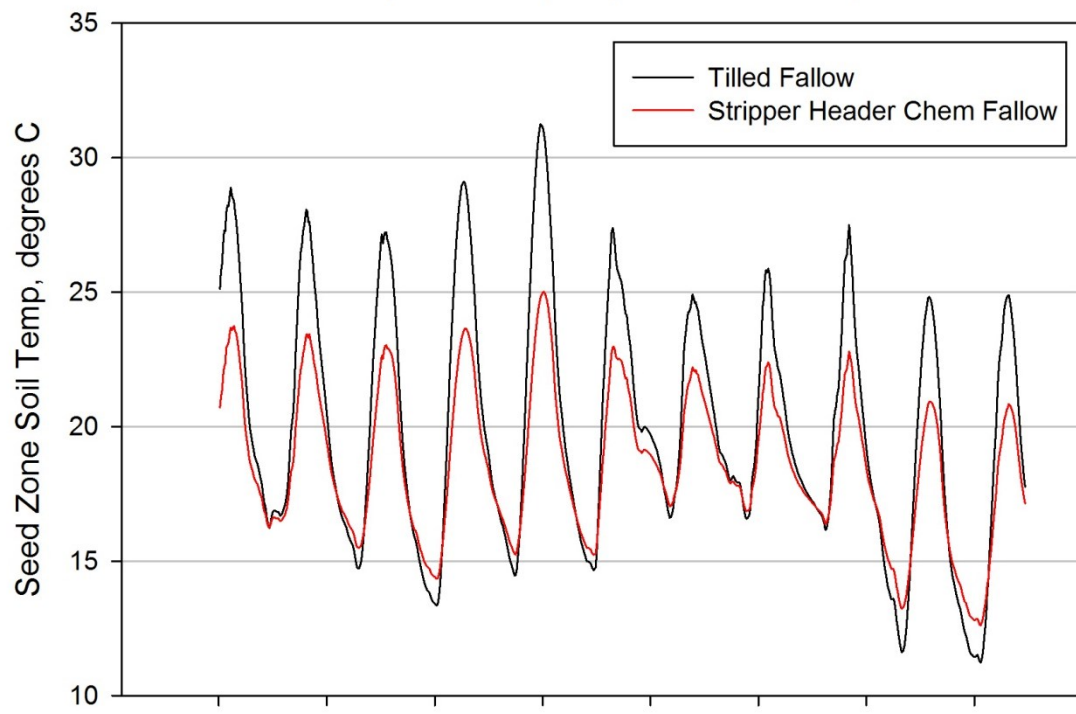


## Gravimetric Water Content Over Time, 0-3" and 3-6"





Soil Temperatures, September 17-27, 2014





# 2014-Planted winter canola



## In Summary

- We are building residue in an undisturbed system
- We were able to successfully seed directly into standing stubble in this high-residue system.



# Future plans

- Measure permanent wilting point.
- Run a germination study to see just how much water canola needs to germinate in this soil.
- Another year of gravimetric water content sampling.
- Soil sample analysis for carbon and nitrogen content.



# Acknowledgements



- REACCH, USDA-NIFA award #2011-680020-30191
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