

# YWTG 2010

## Stand Establishment

Cover Crop

Strip Till



American  
Crystal  
Sugar  
Company

# Strip Till 2009

Grower trials two locations

Crookston, MN

AWG Farms

Argyle, MN

Osowski Farms

# Strip Till Systems

- **6-12 Inch strip tilled in stubble in fall**
- **Crop planted in tilled strips in spring**
- **Conserves energy (fuel)**
- **Reduces soil erosion**
- **Maintains higher organic matter**

# Strip Till Systems (cont.)

- **Tilled strips warm sooner in spring**
- **Conserves soil moisture**
- **Yield is similar to conventional tillage**
- **Reduces expenses-less tillage operations**
- **Roundup and Xbeet are very good field management practices for this system**

# AWG Farms Crookston

- Modified strip till
- Fertilizer incorporated prior to strip till
- Strip tilled with 12 row Twin Diamond
- Light tillage on conventional
- Planted May 6<sup>th</sup> John Deere Maxmerg 2+
- 18 row drill, no trash wheels
- Some strips tilled prior to planting

# Anatomy of a Strip Tillage

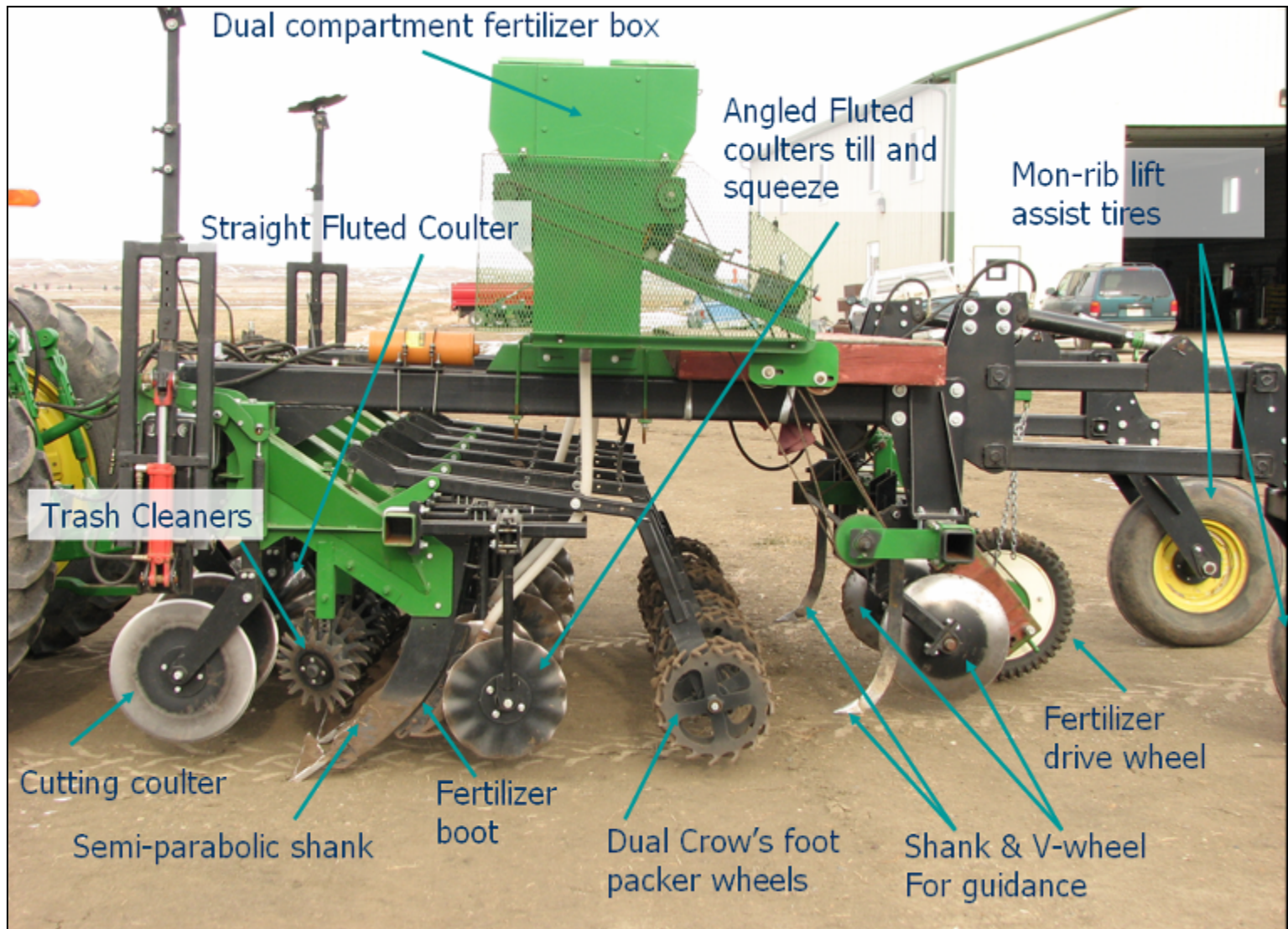


Image: Dr. Robert G. Evans  
USDA-ARS Sidney, MT

# Trash Wheels



Strip Till Crookston April 16<sup>th</sup> 2009  
Two weeks prior to planting






# Strip till prior to planting

Zero pass

One pass



A green tractor is pulling a yellow and green planter through a field of corn stubble. The planter has multiple rows of yellow seed hoppers. The tractor is moving away from the camera, leaving tracks in the soil. The background shows a line of trees under a clear sky.

Planting date  
May 6<sup>th</sup>2009

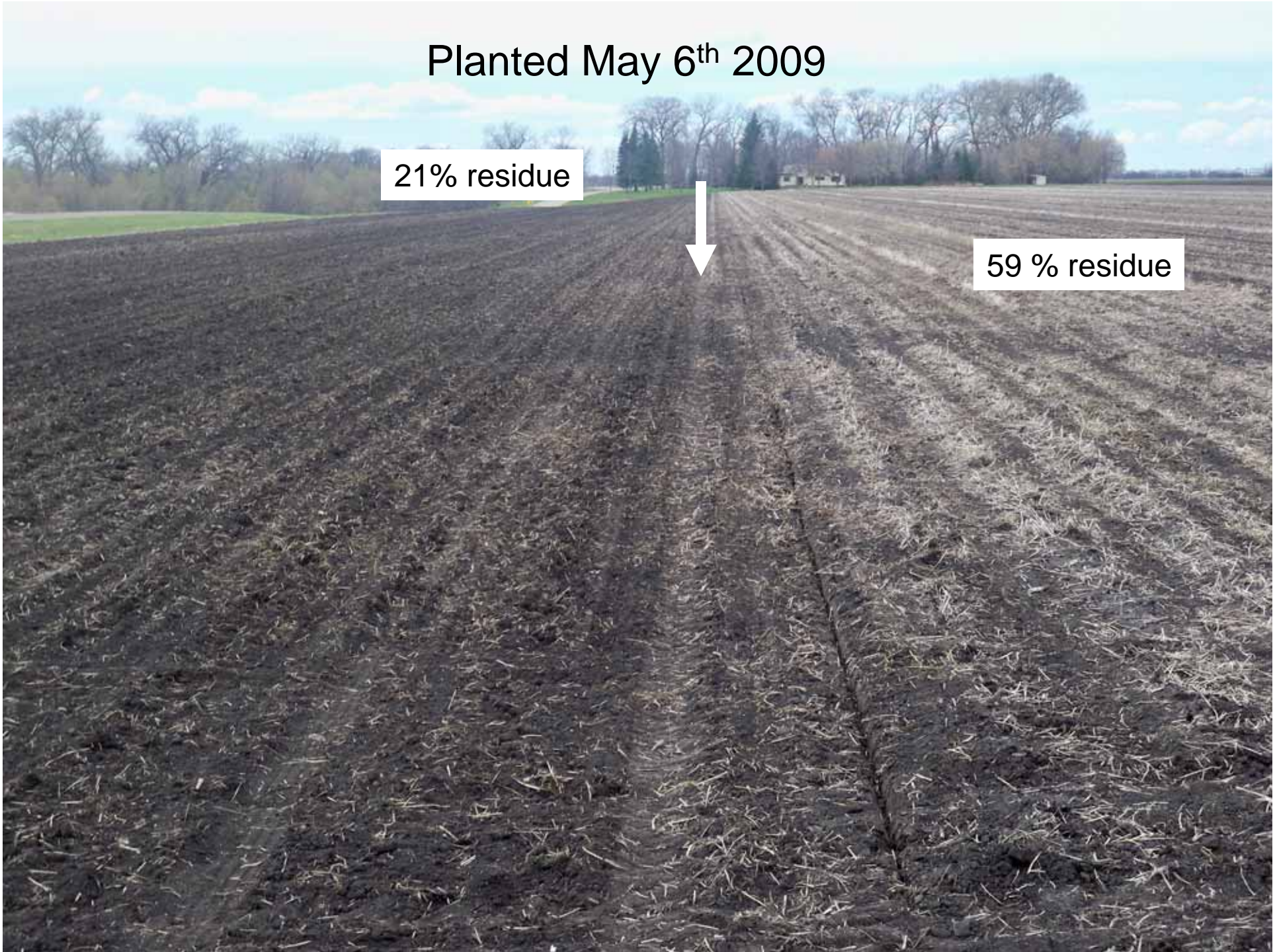
Depth 1.5" mixed variety  
Roundup 2X

Planted May 6<sup>th</sup> 2009

21% residue



59 % residue





**“knotted Line”**  
% of residue



# Strip Till percent residue Crookston May 19<sup>th</sup> 2009

Residue %	Ridges	1 pass	2 pass	0 pass
count 1	25%	60%	50%	61%
count 2	21%	49%	55%	63%
count 3	16%	64%	50%	64%
count 4	22%	63%	53%	64%
% Residue average	21%	59%	52%	63%

# Strip Till stand count Crookston May 21<sup>st</sup> 2009

stand/100feet	ridges	1 pass	2 pass	0 pass
count 1	85	89	69	104
count 2	103	82	89	110
count 3	97	98	105	101
count 4	109	112	99	125
average stand	99	95	91	110

# Strip Till stand count

## Crookston June 3<sup>rd</sup> 2009

stand/100 feet	Ridges	1 pass	2 pass	0 pass
count 1	151	149	148	172
count 2	155	127	158	149
count 3	167	138	154	162
count 4	161	153	128	137
average stand	159	142	147	155

June 9<sup>th</sup> zero pass

63% residue

155% stand

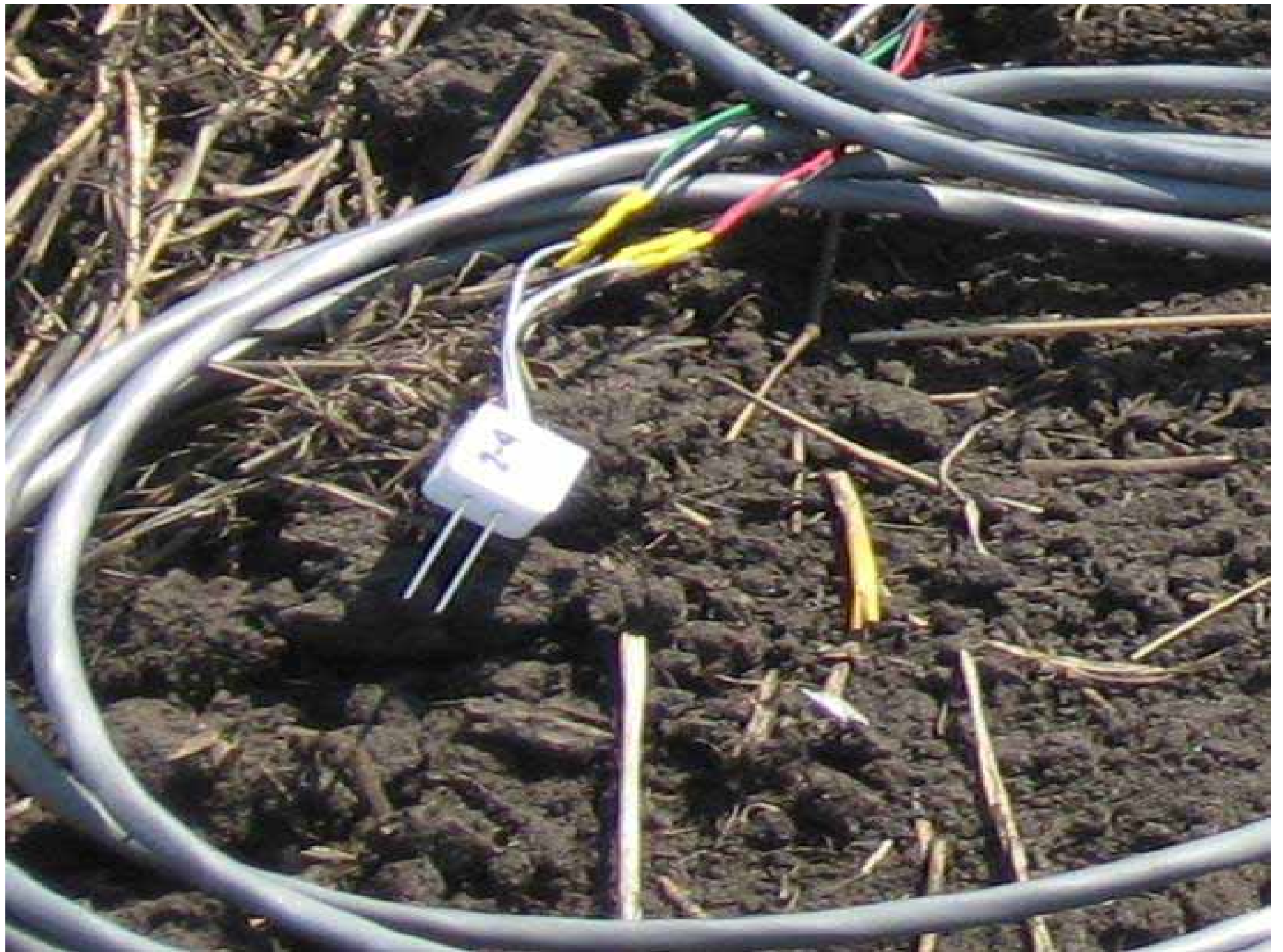




# Strip Till Tour Crookston Wagner

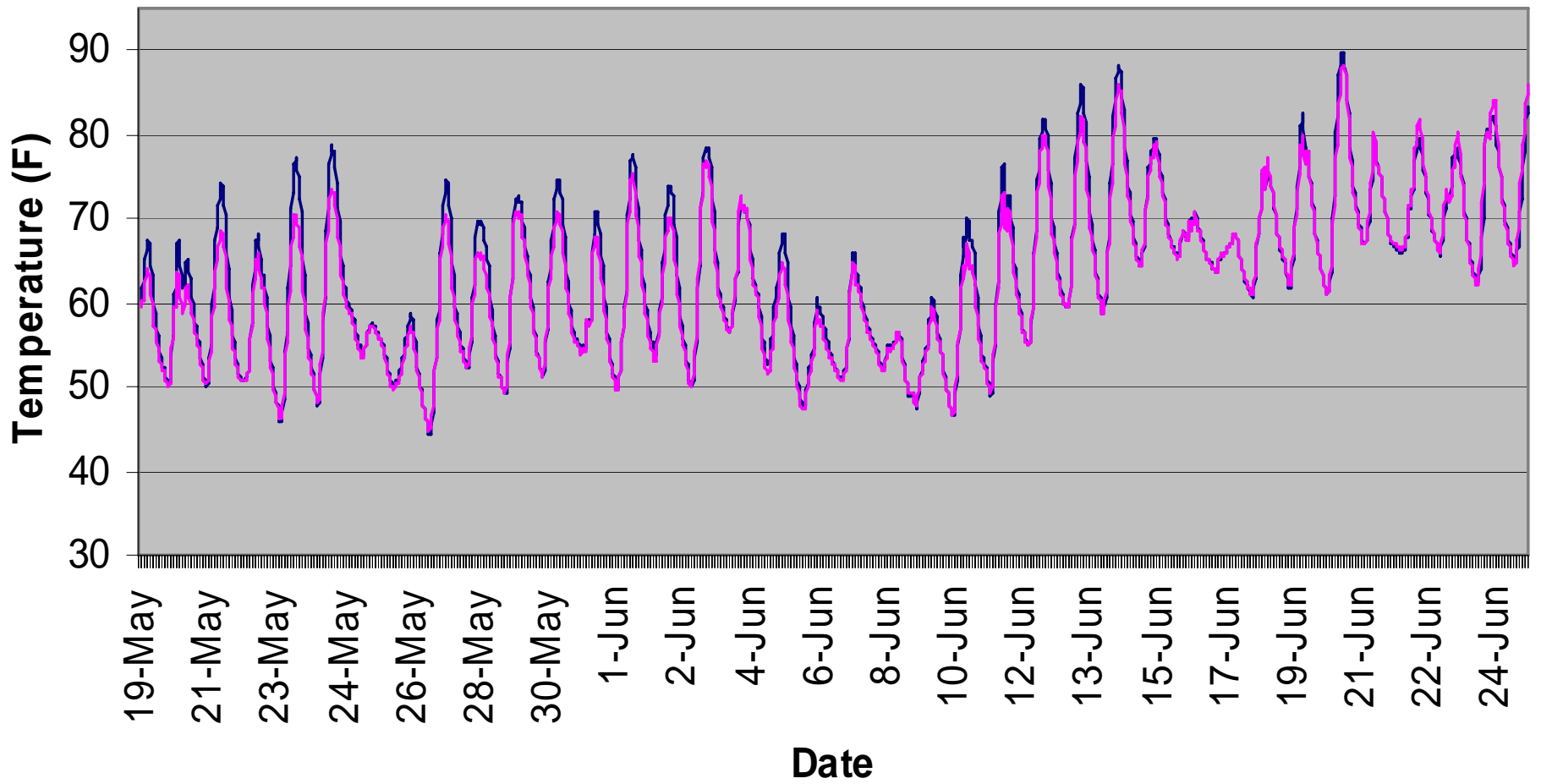
June 9<sup>th</sup> 2009





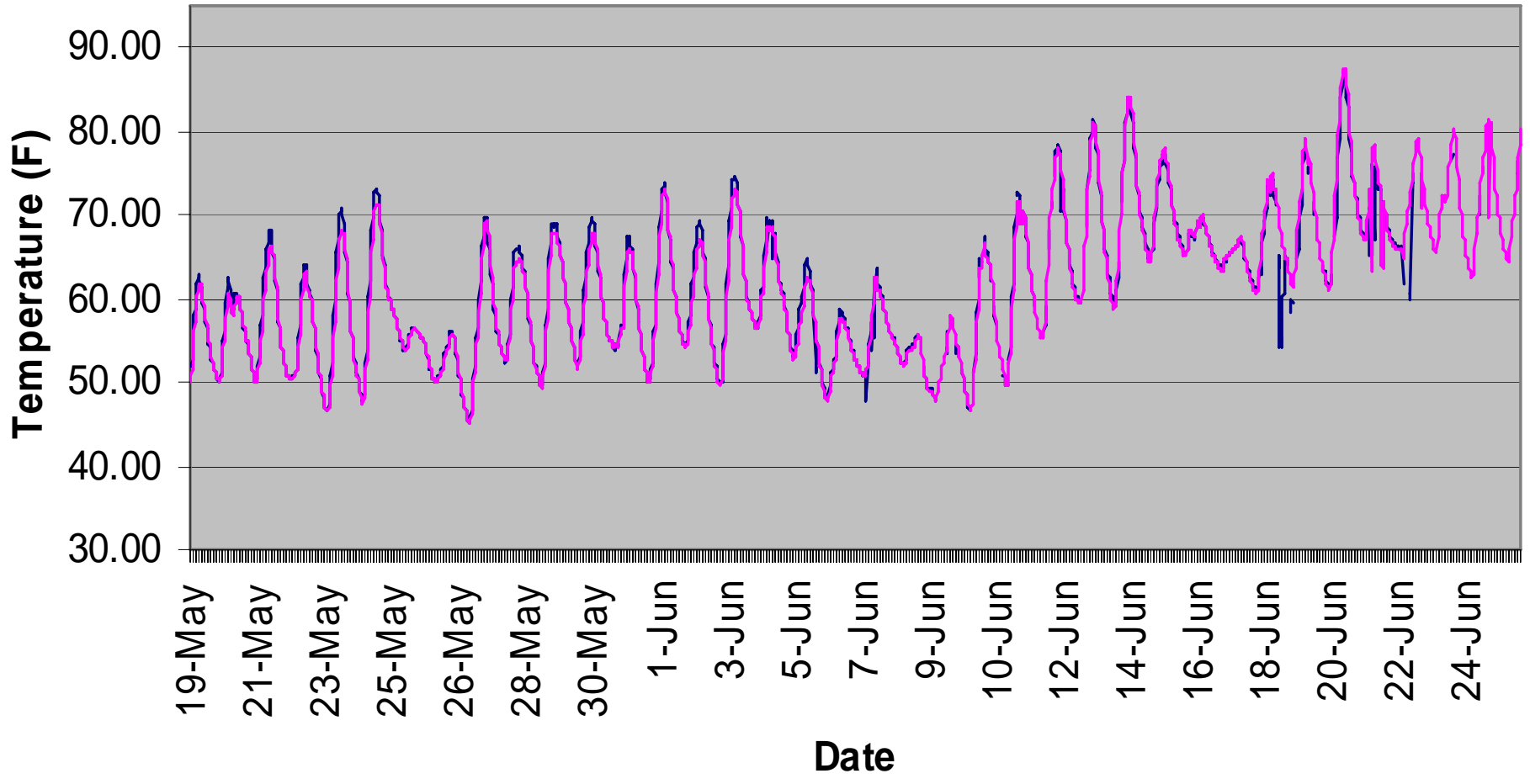
# Crk #2 Comparison of "in row" and "between row" Temperature - Strip - No Pass

— In Row — Between Row



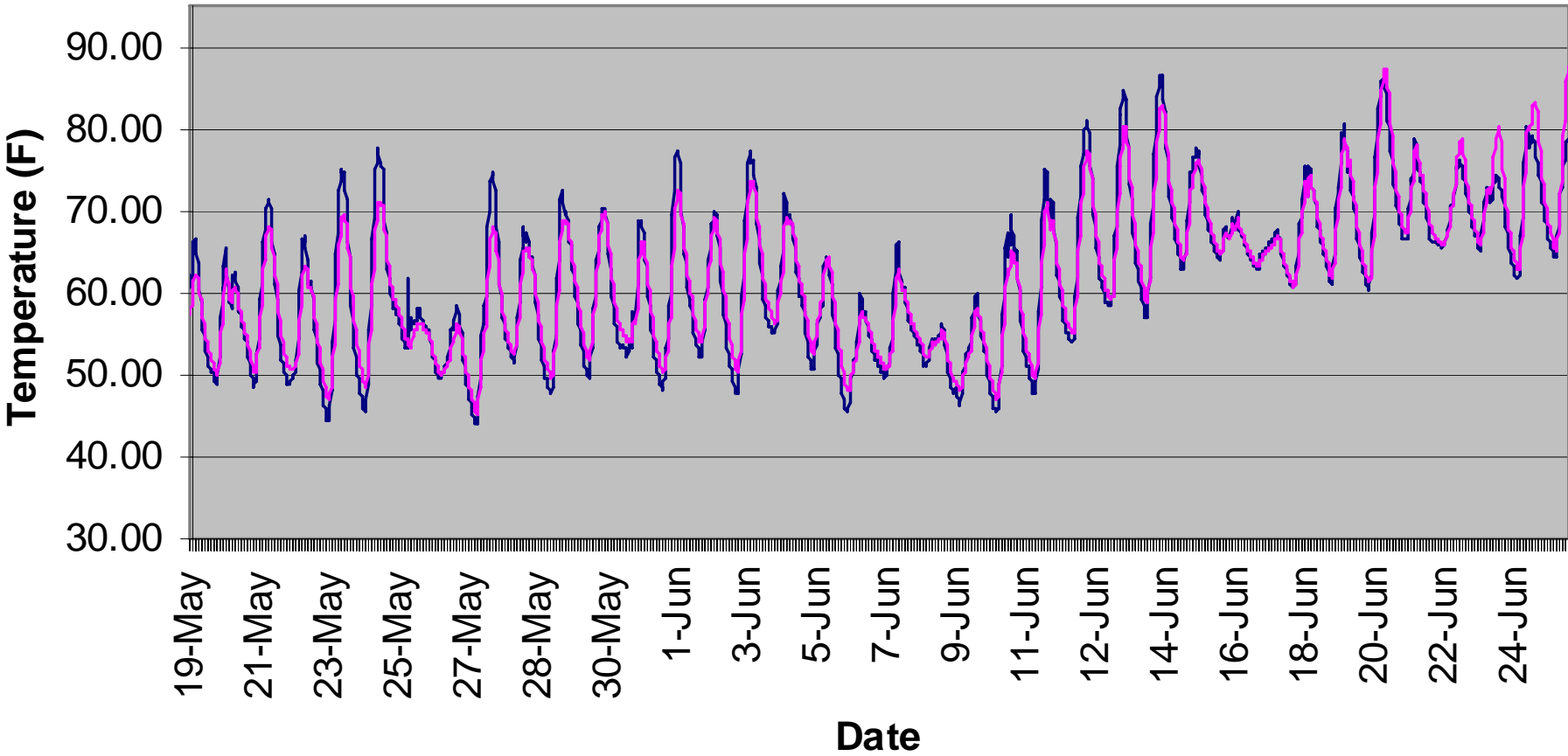
# Crk #3 Comparison of "in row" and "between row" Temperature - Strip - Ridges

— In Row — Between Row



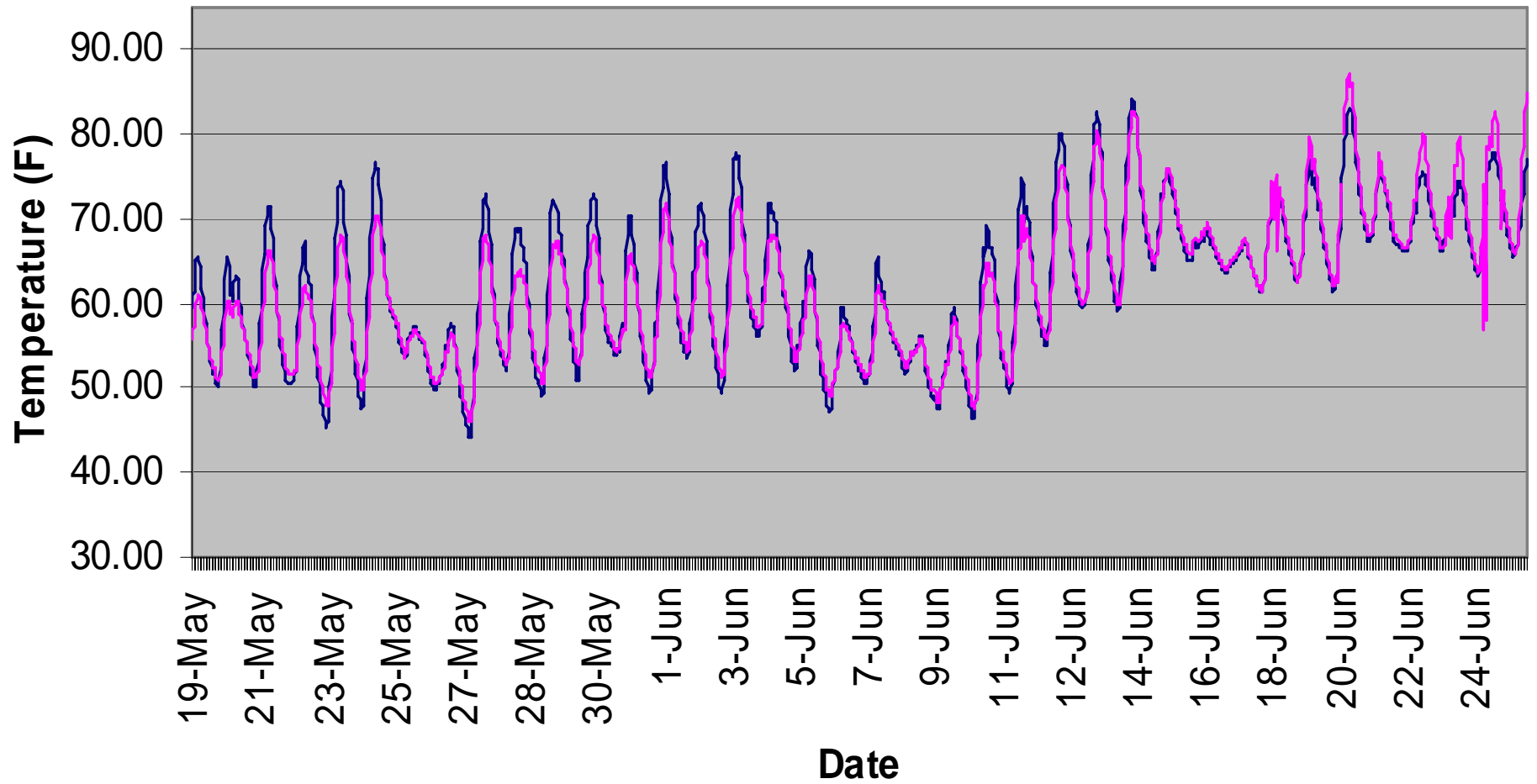
# Crk #1 Comparison of "in row" and "between row" Temperature - Strip - One Pass

— #1 In Row — #1 Between Row



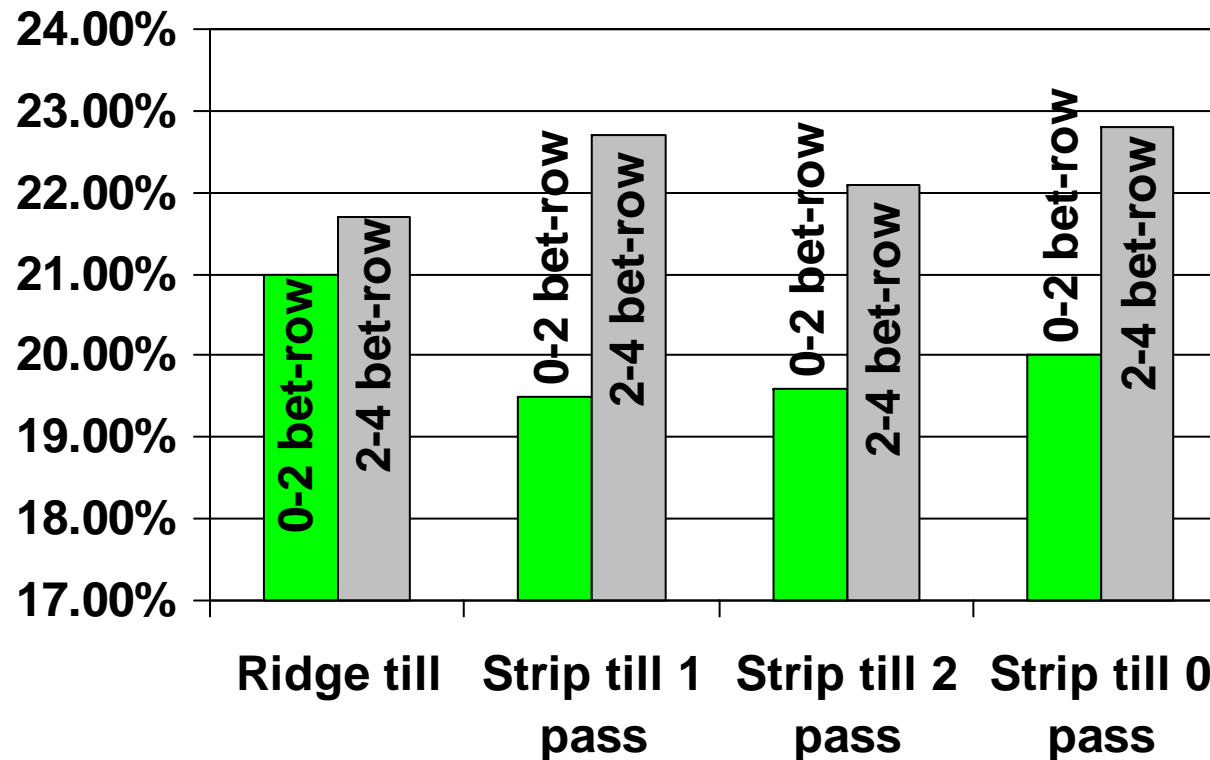
# Crk #3 Comparison of "in row" and "between row" Temperature - Strip - Two Pass

— #3 In Row — #3 Between Row

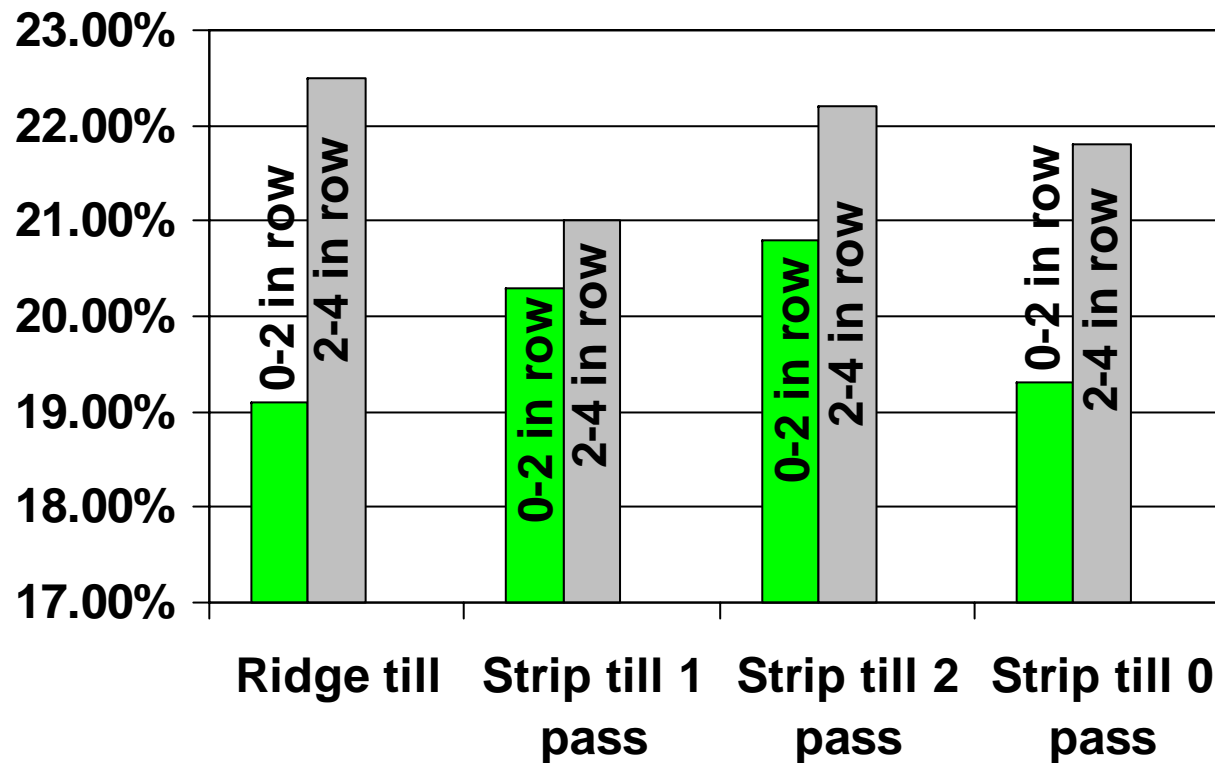


# Bet-row volume water content

## Crookston May 15<sup>th</sup> 2009



# In-row volume water content Crookston May 15<sup>th</sup> 2009





# Strip till Crookston

## Hand sampled November 4th

	ridges	1 pass	2 pass	0 pass
sugar %	15.72%	16.38%	16.65%	16.90%

# Seeding 12 row strips May 12



Used RTK in fall with 12 row strip till machine

Seeding in spring with 24 row planter

# Strip after over-wintering



Grower concern with open trench before seeding

Strip till field was harrowed to close trench

# Placing data miners



Harrowing reduced strip effect.

At seeding in strip some seed was placed into straw bunches, reducing stand.

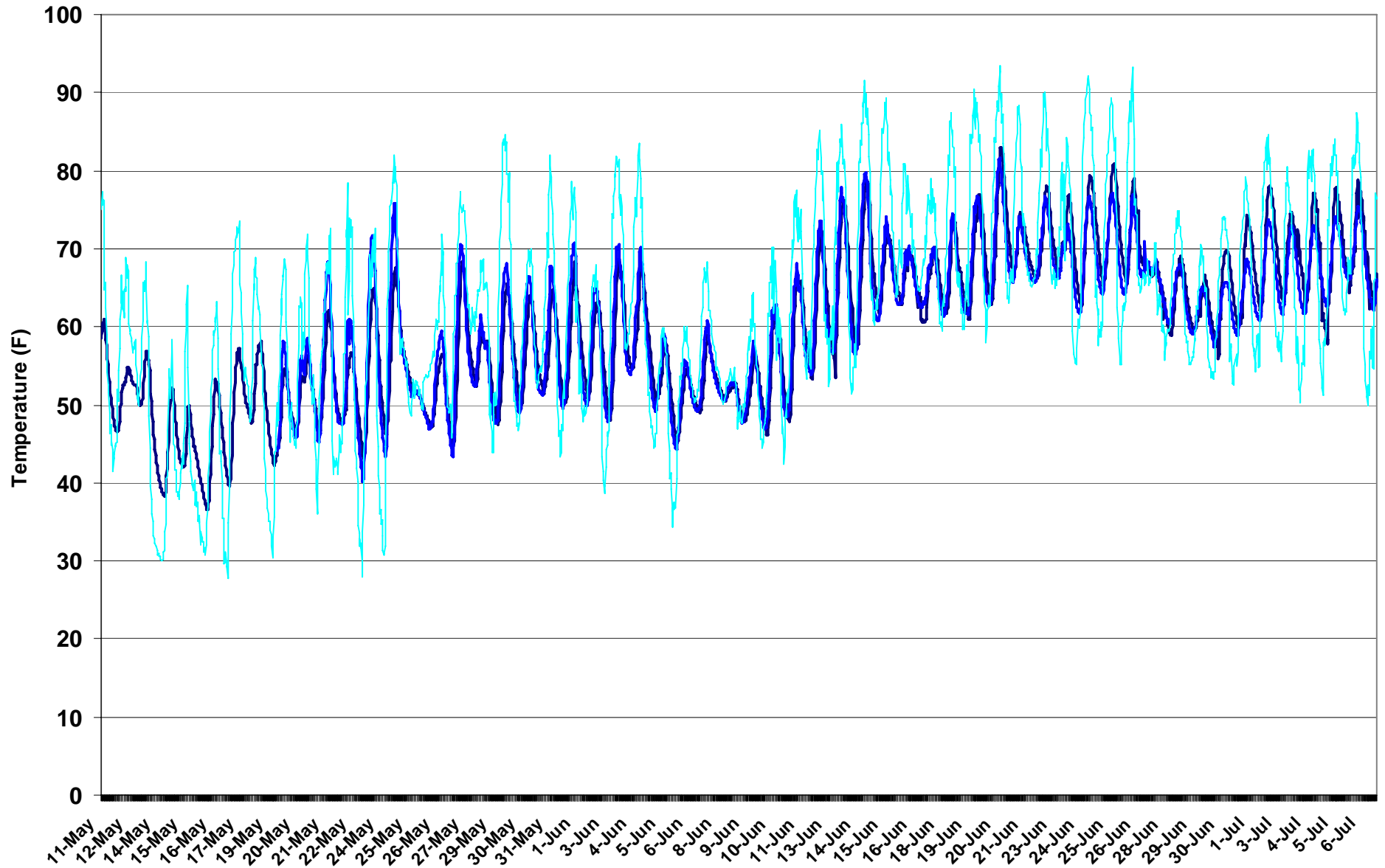
Final conventional stand count at 199

Final strip stand count at 159

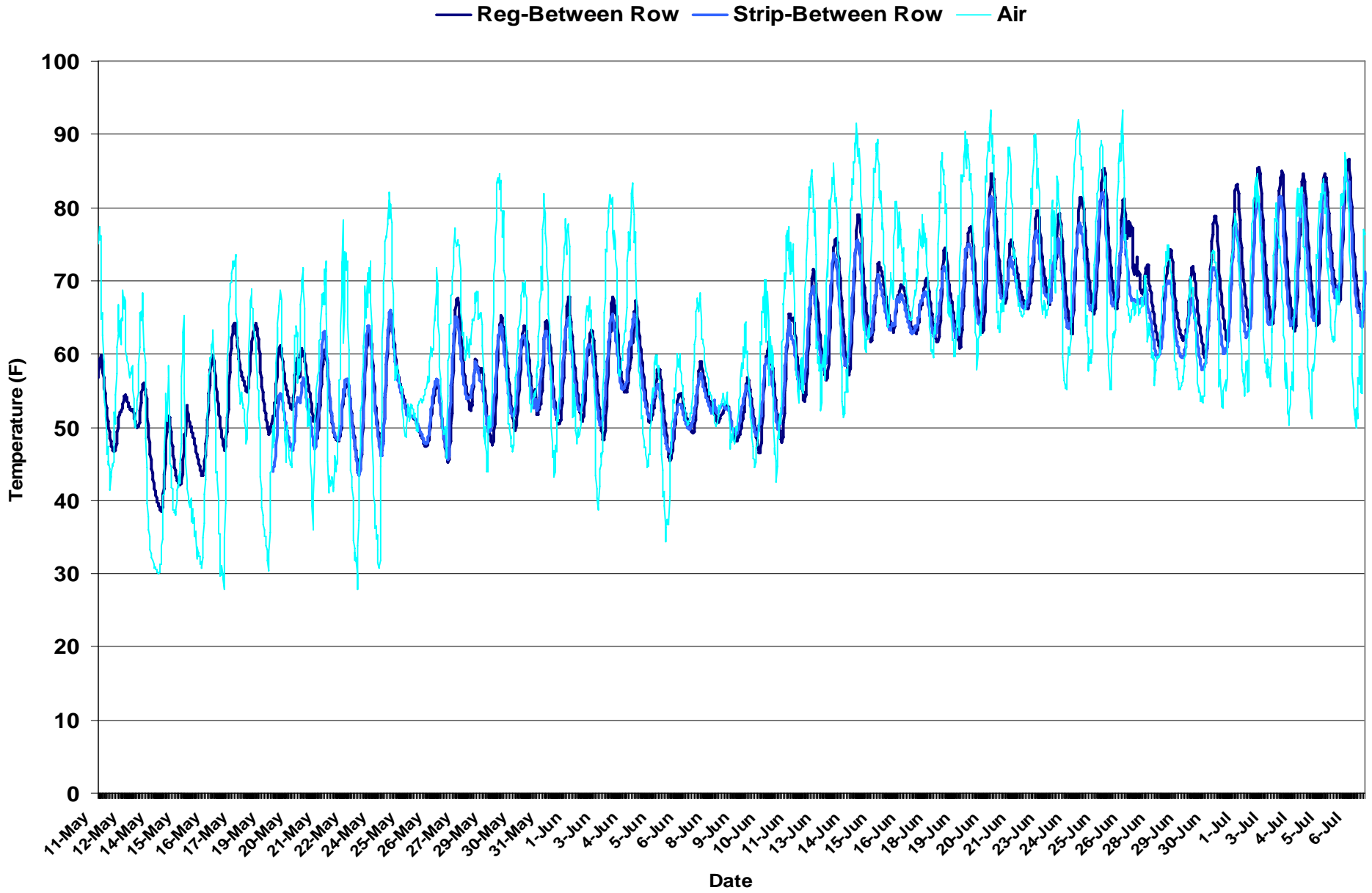
AI brought along his supervisor

# Comparison of 2 inch Soil Temperature Between Strip Till and Regular Tillage at Argyle.

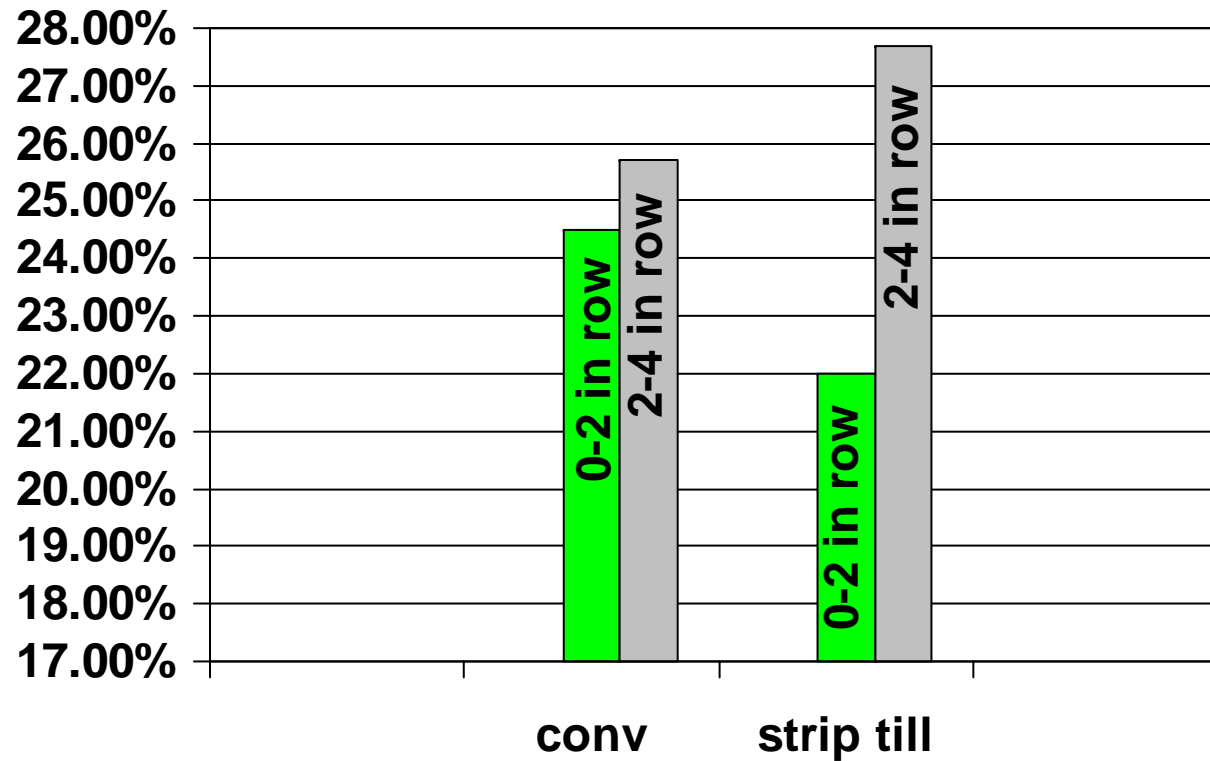
— Reg-In Row — Strip-In Row — Air



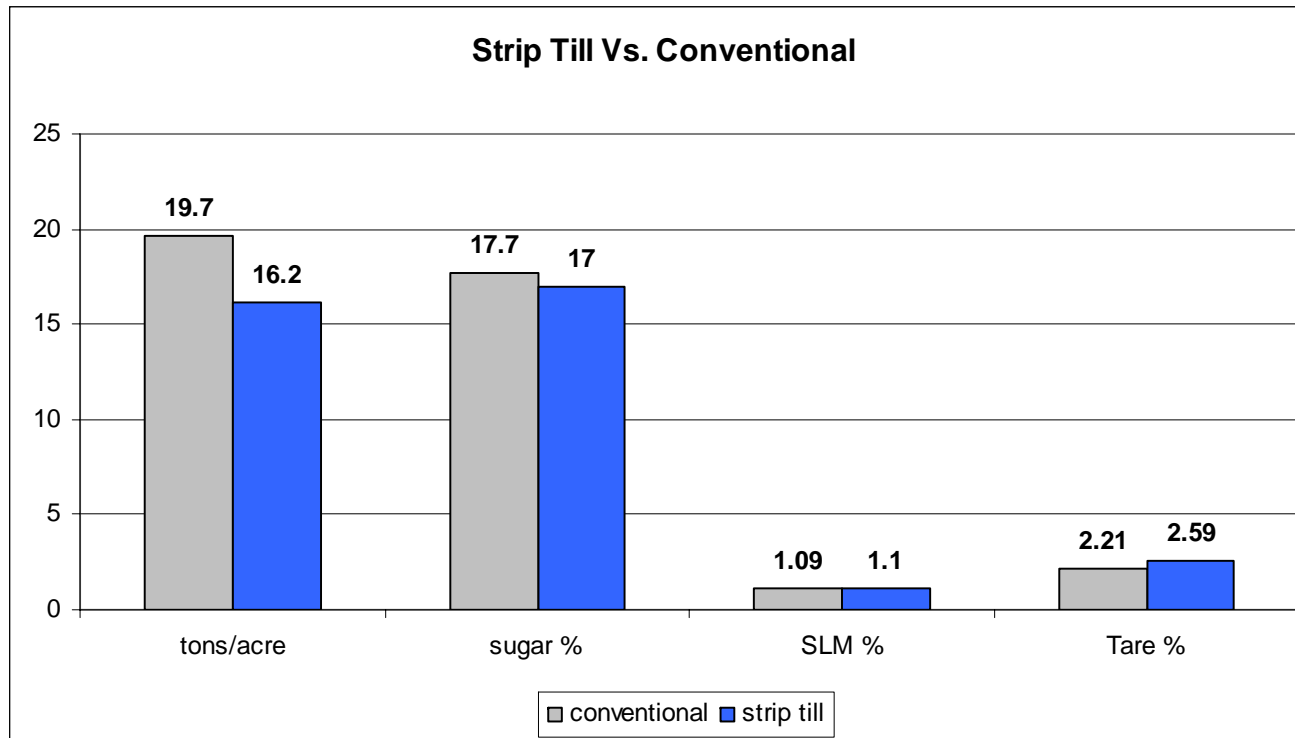
# Comparison of 2 inch Soil Temperature Between Regular and Strip Tillage at Argyle.



# In - row volume water content Argyle May 11th



# Conventional strip till field trial results



Loss of \$197/acre in strip till portion of field

Grower hesitation to continue, didn't strip till in Fall 09



# Take Home after one year

Soil warms quickly in strips

Manage timing in seeding too wet/too dry

Fertilizer issues early placement in Fall

Be committed to do it the right way

Slow integration, experimental technology

One of many tools in residue management

# Strip Till Row Orientation Study

L.F. Overstreet

N.R. Cattanach

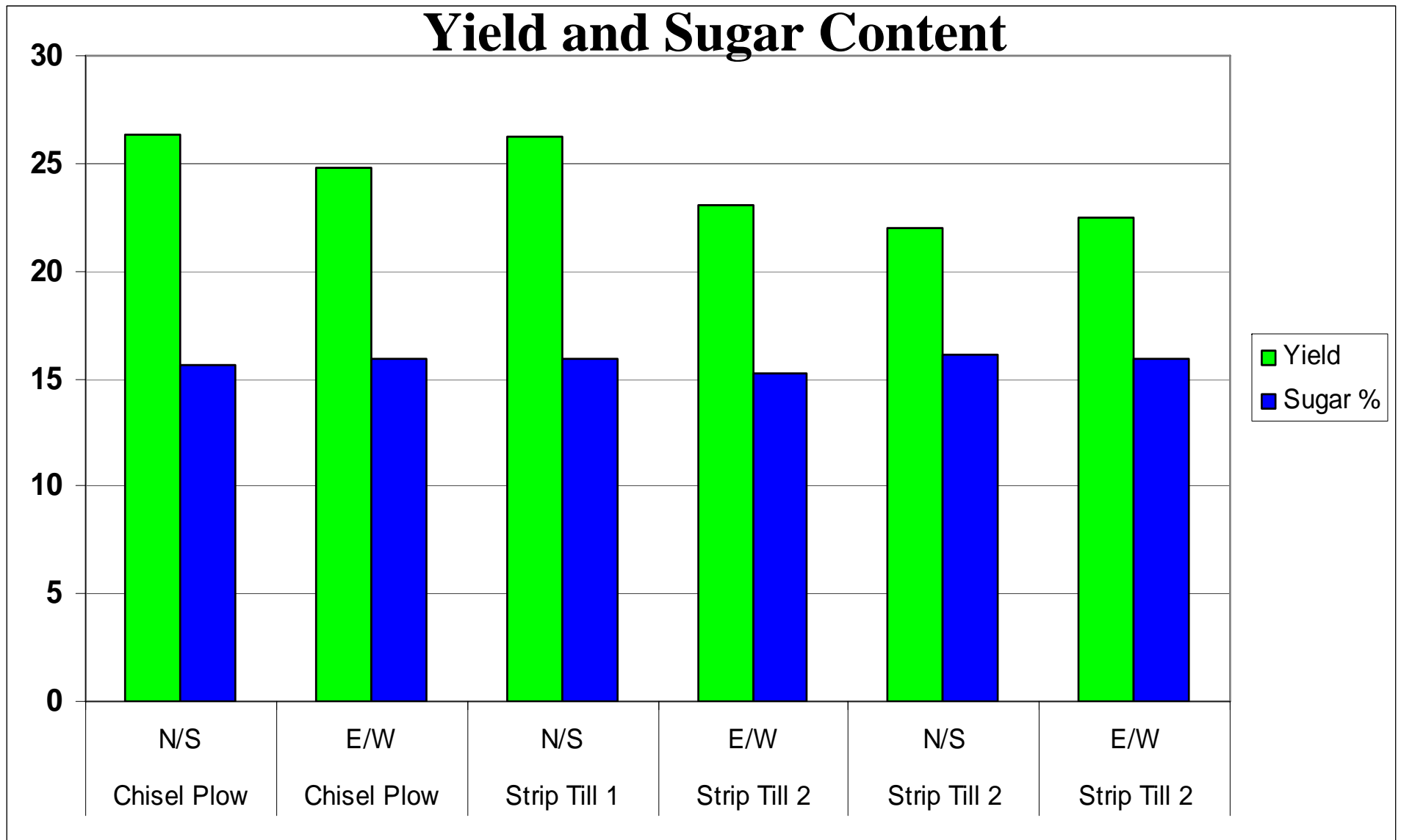
Sarah Gegner

NDSU Soil Science Dept.

# Study 2: Row Orientation in Strip Tillage

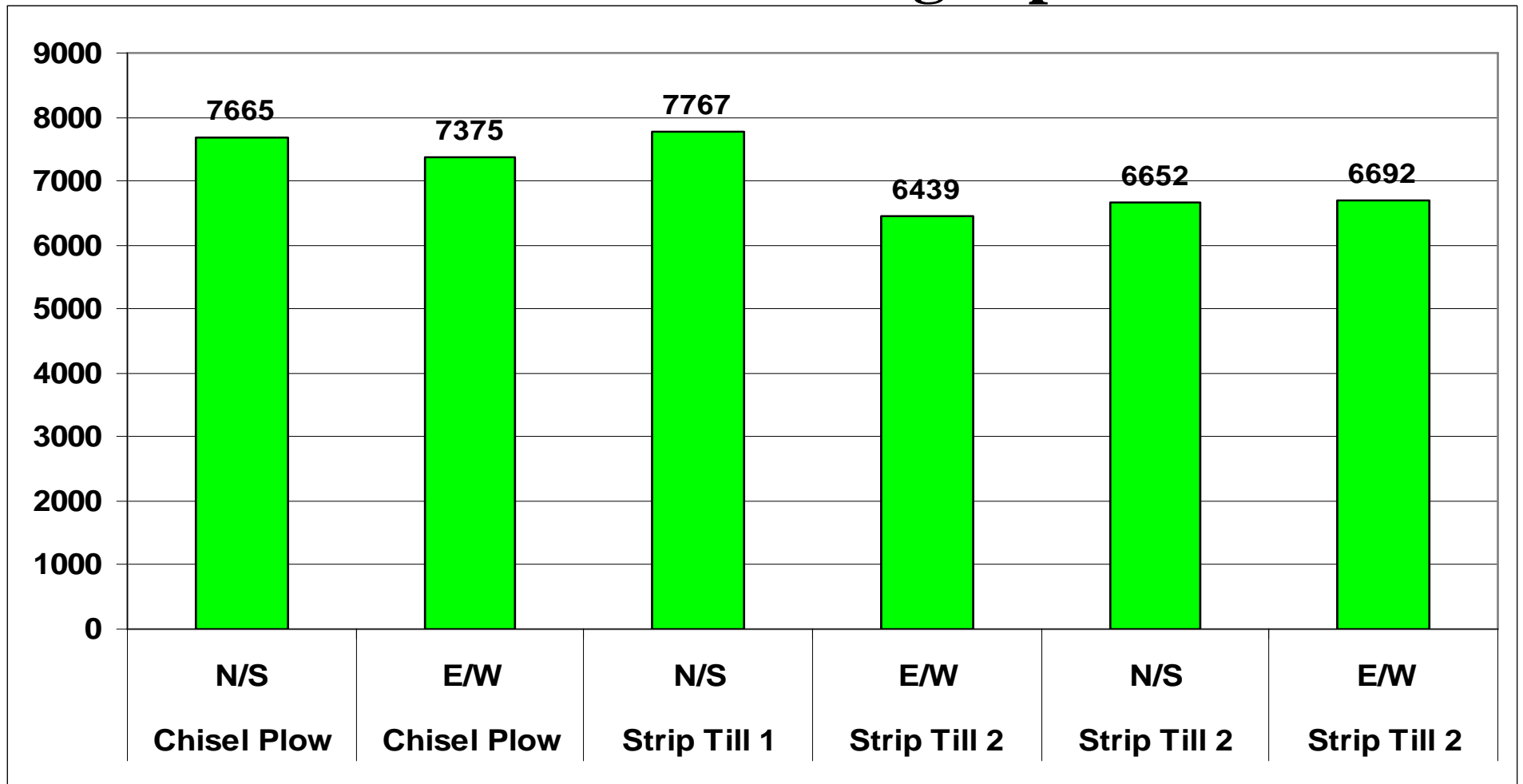
- OBJECTIVES:
  - determine if row orientation is related to early season soil warming and moisture content in fields under strip tillage and conventional tillage management
  - determine if row orientation affects final yield and quality in sugarbeet production

# Row Orientation Study

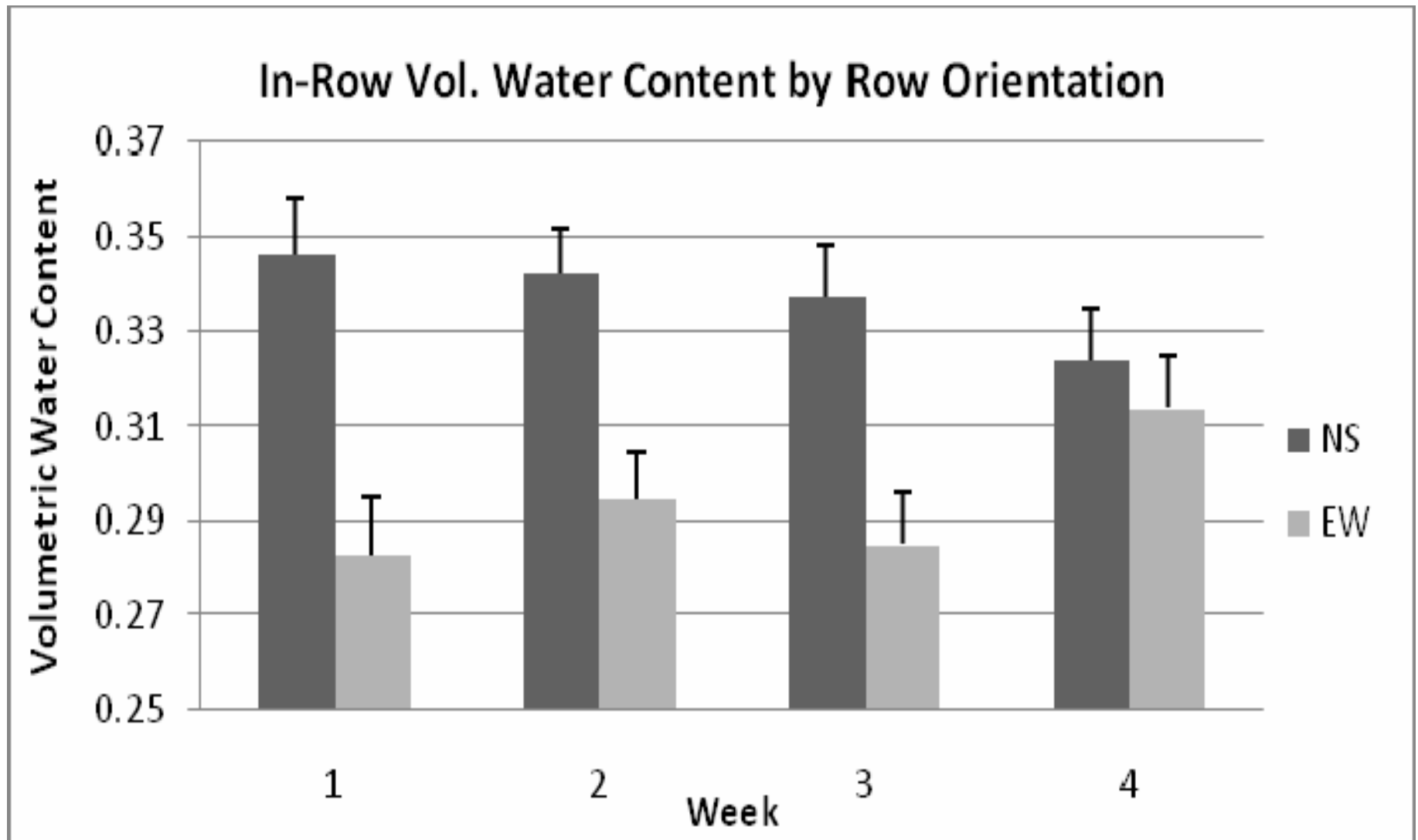


# Row Orientation Study

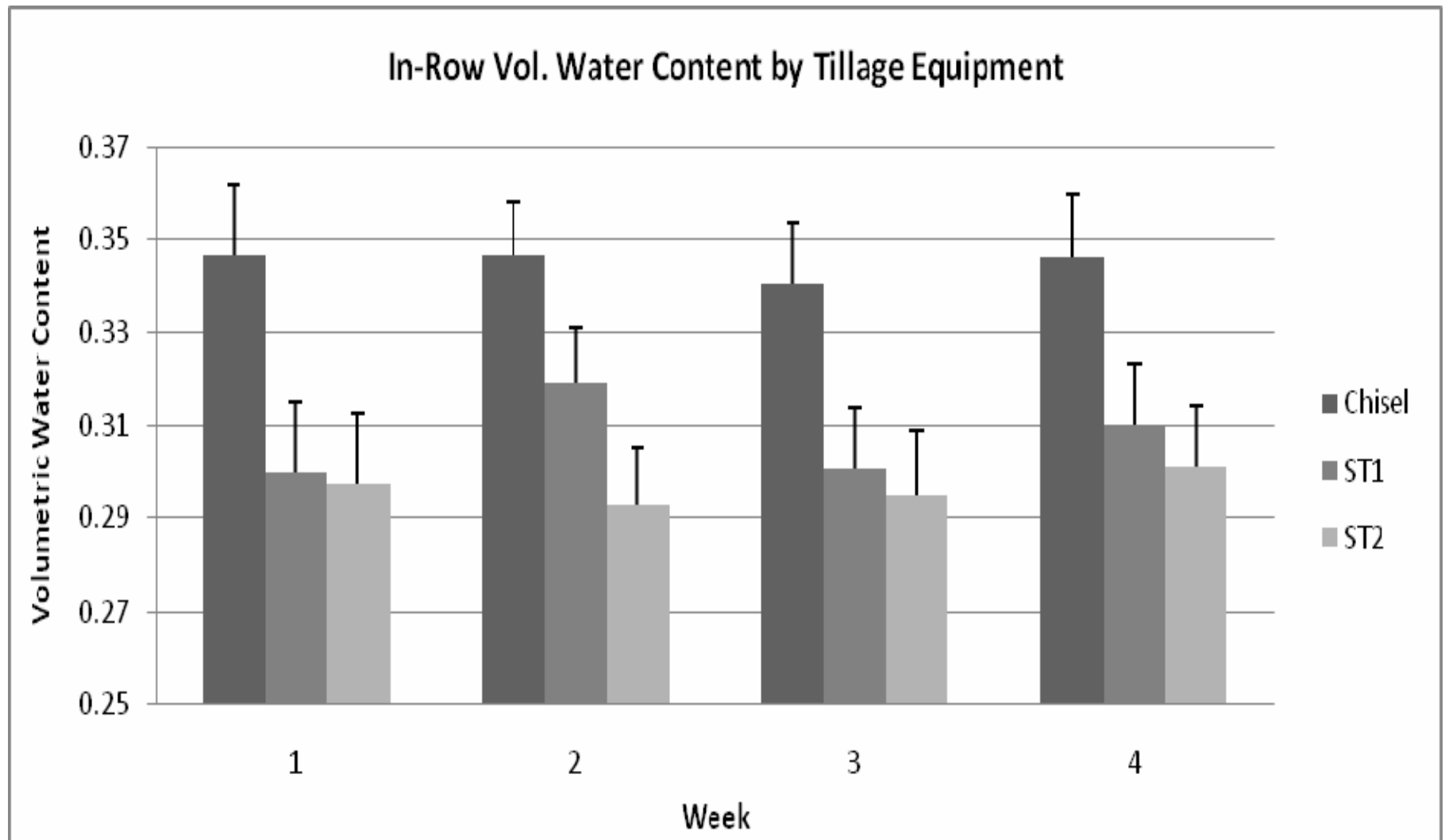
## Recoverable Sugar per Acre



# Soil Moisture



# Soil Moisture



# Row Orientation and Strip Tillage: Conclusions

- Soil Moisture
  - *Row Orientation Effect.* North-South oriented plots had greater in-row soil moisture than East-West oriented plots for three weeks after planting at the 2-inch depth
  - *Tillage Effect.* Conventional tillage resulted in greater in-row soil moisture than strip tillage in the four weeks following planting at the 2-inch depth
  - *Machine Effect.* In-row soil moisture was the same regardless of strip tillage machine used, HOWEVER there were differences in soil moisture in the inter-row area between strip tillage machines



# Cover cropping and residue management







# Sugarbeet Fields Over Wind Erodibility Group Ratings of Red River Valley Soils

## Wind Erodibility Groups



Sugarbeet Fields

City

US Highway

Interstate

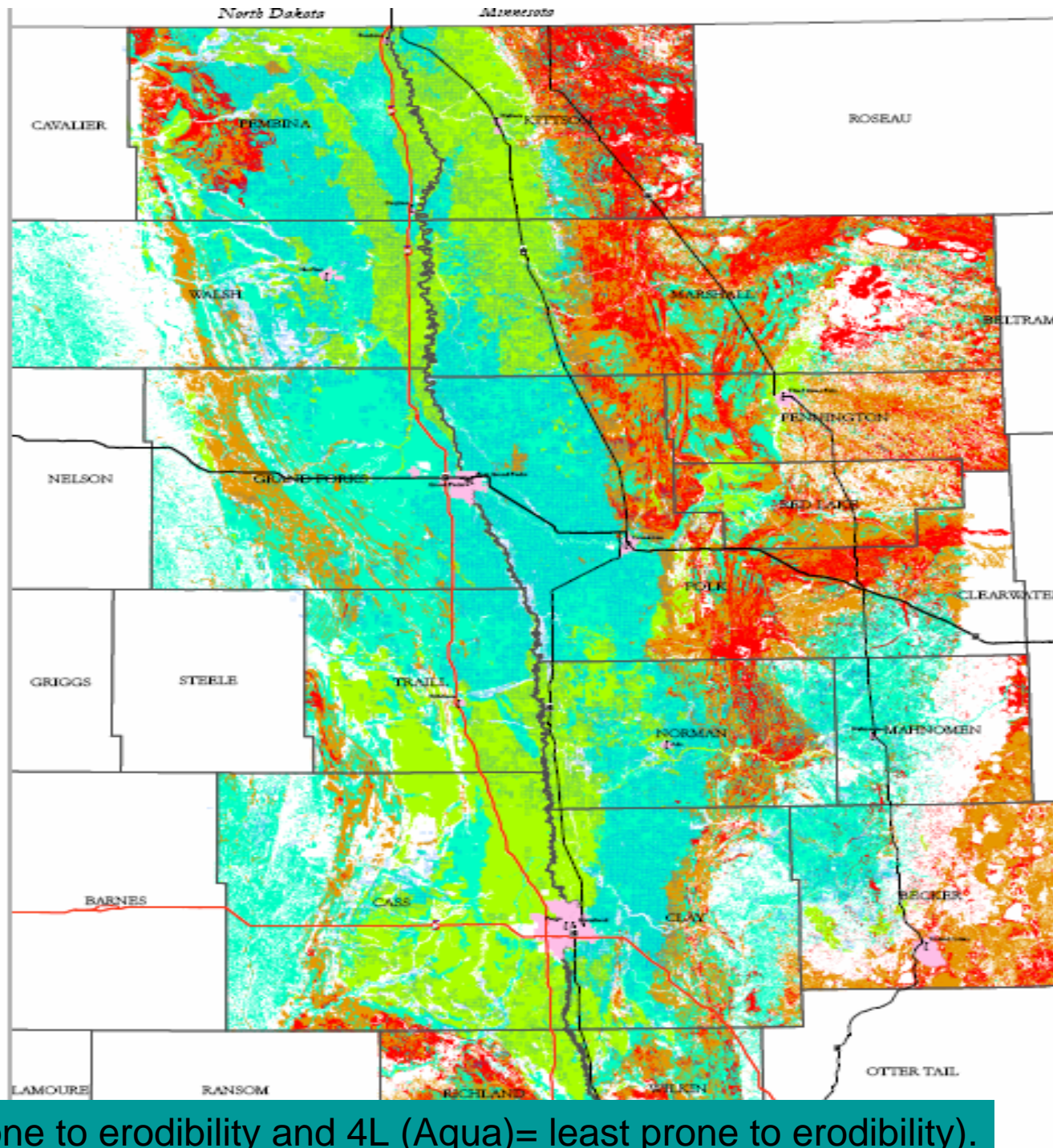
County Boundary

Wind erodibility group (WEG) is a grouping of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 5 are the least susceptible.

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service on May 11th, 2007 in the Minnesota Area 1 Office, 2056 State Hwy 1 NE, Thief River Falls, MN 56701. Soil data displayed here is a product of the NRCS Soil Survey and was current at time of production. For current information please visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data. Hatched sugarbeet fields displayed here were provided by the American Crystal Sugar Company.



1:350,000

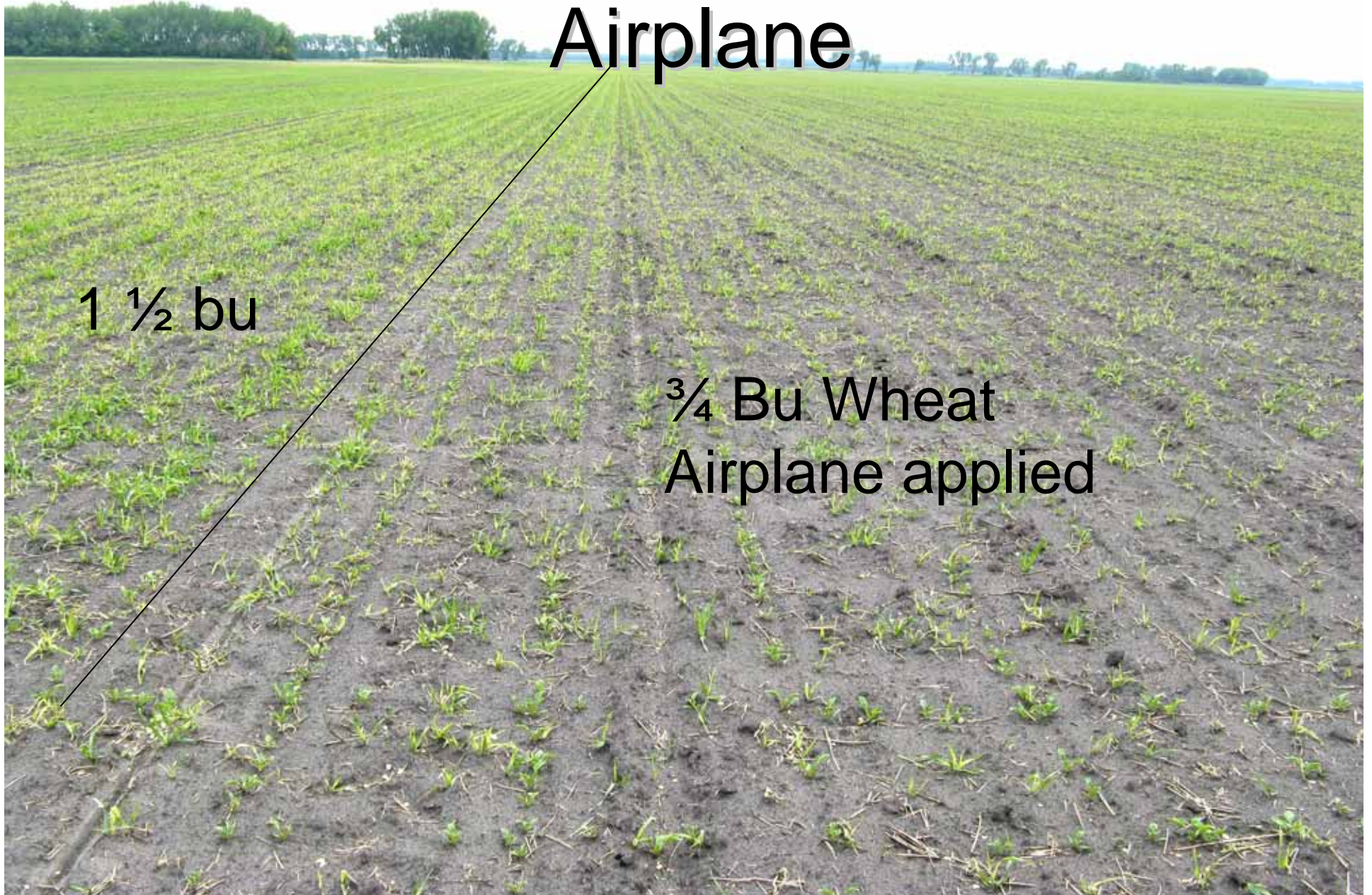


(2 (Red)= most prone to erodibility and 4L (Aqua)= least prone to erodibility).

# YWTG 2010

<b>Revenue Per Acre based on Planting Date and Stand Count</b>							
<b>Data based on crop years 2006-2008</b>							
<b>Week Ending Date</b>							
<b>Stand Count</b>	<b>25-Apr</b>	<b>2-May</b>	<b>9-May</b>	<b>16-May</b>	<b>23-May</b>	<b>30-May</b>	<b>6-Jun</b>
<b>50</b>	\$684	\$638	\$592	\$547	\$501	\$455	\$410
<b>60</b>	\$726	\$681	\$635	\$589	\$544	\$498	\$452
<b>70</b>	\$769	\$723	\$678	\$632	\$586	\$541	\$495
<b>80</b>	\$812	\$766	\$720	\$675	\$629	\$583	\$538
<b>90</b>	\$854	\$809	\$763	\$717	\$672	\$626	\$580
<b>100</b>	\$897	\$851	\$806	\$760	\$714	\$669	\$623
<b>110</b>	\$940	\$894	\$848	\$803	\$757	\$711	\$666
<b>120</b>	\$982	\$937	\$891	\$845	\$800	\$754	\$708
<b>130</b>	\$1,025	\$979	\$934	\$888	\$842	\$797	\$751
<b>140</b>	\$1,068	\$1,022	\$976	\$931	\$885	\$839	\$794
<b>150</b>	\$1,110	\$1,065	\$1,019	\$973	\$928	\$882	\$836
<b>160</b>	\$1,153	\$1,107	\$1,062	\$1,016	\$970	\$925	\$879
<b>170</b>	\$1,196	\$1,150	\$1,104	\$1,059	\$1,013	\$967	\$922
<b>180</b>	\$1,239	\$1,193	\$1,147	\$1,101	\$1,056	\$1,010	\$964
<b>190</b>	\$1,281	\$1,236	\$1,190	\$1,144	\$1,099	\$1,053	\$1,007

# Wheat applied by Airplane



1 ½ bu

¾ Bu Wheat  
Airplane applied

# Ridges and Residue

**7% residue**

**17 % residue**

**Lumps are good**



# 37% Corn Residue



**Close up view**



**163 bu corn in  
2007**



# Questions

