

## Topdressing Winter Wheat Surface vs. Sub-Surface Band



Kastens Inc. Farms  
Rawlins County, Kansas  
RR 2 Box 83  
Herndon, KS 67739  
(785) 626-9284

[www.kastensinc.com](http://www.kastensinc.com)



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## Study Topics

- Topdressing application type
    - Sub-surface band
    - Surface band
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## Topdressing Application Type

- On the High Plains rainfall events are difficult to predict both in volume and in timing.
  - Most producers topdress Nitrogen using a surface band or broadcast method. Either method require a timely rain to get the Nitrogen incorporated.
  - An alternative to surface band (or broadcast) is to place Nitrogen sub-surface. This method is more expensive (\$7.25/ac vs. \$4.50/ac).
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## Topdressing Application Type

- Potential benefits to Sub-Surface Placement
  - Lower risk in that a timely rain is not necessary to move the Nitrogen to the root zone.
  - Less Nitrogen tie-up on surface residue.
  - Less Nitrogen loss potential due to volatilization.
- Potential detriments to Sub-Surface Placement.
  - Higher cost.
  - Potential for yield loss due to damage of crown roots by coulters.
  - Narrower window for application in wet years (tractor vs. sprayer).

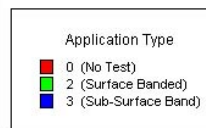
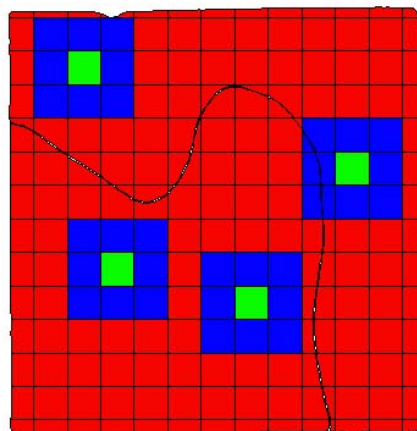
Equipment -40' DMI toolbar on 15" centers.



## Project Description

- To simulate surface band the DMI coultter machine was raised out of the ground over the test plots.
- One-Acre test plots were scattered across all fields that resulted in a total of eight test plots across two fields.
- The eight one-acre grids around the test plot were average to represent the “control” plot to be tested against the test plot.

## Plot Example



## Analysis

- Fertilizer applied with DMI 40', direct-injection toolbar. Mapping done with Farmworks SiteMate VRA.
- Yield data collected with John Deere Greenstar systems
- All Yield data was processed through MPGM program which resulted in a grid based yield map (60' grids).
- All data were merged together using MapInfo and in-house built scripts and aggregated at a 1 acre level.
- All data were then exported to Excel for analysis.
- Paired Ttest's were used to evaluate the treatments.

## Results -2007

			Prob Value	Confidence
			0.826	17%
		<b>45.21</b>	<b>45.50</b>	<b>average Yield</b>
Field	obs ID	Sub-Surface	Surface-band	
HkLane	1	35.60	36.72	
HkLane	2	36.17	45.48	
HkLane	3	38.93	40.60	
HorRanch	6	48.49	42.49	
HorRanch	7	52.96	51.74	
PeteSW80	9	48.53	53.44	
PeteSW80	10	52.47	55.35	
PeteSW80	11	54.30	54.32	
TerQTR	12	46.48	47.87	
TerQTR	13	40.46	36.60	
TerQTR	14	41.06	34.62	
TerQTR	15	47.02	46.70	

## Results -2008

Application made 3/27/08  
 DMI 2800 Nutri-Placer on 15" centers  
 K&K BoltePivotE & K&KBoltePivotW  
 Dryland re-cropped wheat in corn stalks

Rainfall timing  
 4/3/2008 0.14  
 4/10/2008 1.63

Avg	25.86	25.16	
STD	3.55	1.93	
CV	0.14	0.08	
Adv Sub		<b>-0.71</b>	
T(2tail)		0.6275927	37%
	<u>Surface</u>	<u>Sub-Surface</u>	
1	22.00	23.79	
2	27.40	25.72	
3	27.89	28.05	
4	27.90	24.83	
5	21.70	23.59	
6	25.54	26.75	
7	31.78	26.34	
8	22.69	22.17	

## Conclusions 2007 & 2008

- As shown in the table, there was no statistically significant difference between Sub-Surface and Surface banding of Nitrogen on the study area in either 2007 or 2008.
- In 2007, topdressing occurred on March 20.
- In 2008, topdressing occurred on March 27.
- In 2007, 1.51" of rainfall within 9 days.
- In 2008, 1.77" of rainfall within 14 days.

## Conclusions

- With at least 1.5" of rainfall being received within fourteen days of the topdressing operation in each year, there were no inherent yield advantages to sub-surface placement of the Nitrogen.

