Precision Farming Systems

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Precision Farming Opportunities

- *Ability to Measure → Measure to Manage*
- *Improve Efficiency of Inputs*
- *Improve Profitability*
- *Enhance Environmental Performance*

Precision Farming Tools

- Yield Monitors - Measurement
- Controllers – Application
- Guidance and Auto Steer -Efficiency
- Soil and Landscape Management
- Variable Rate Prescriptions/Applications
- On-Farm Research –Measure to Manage

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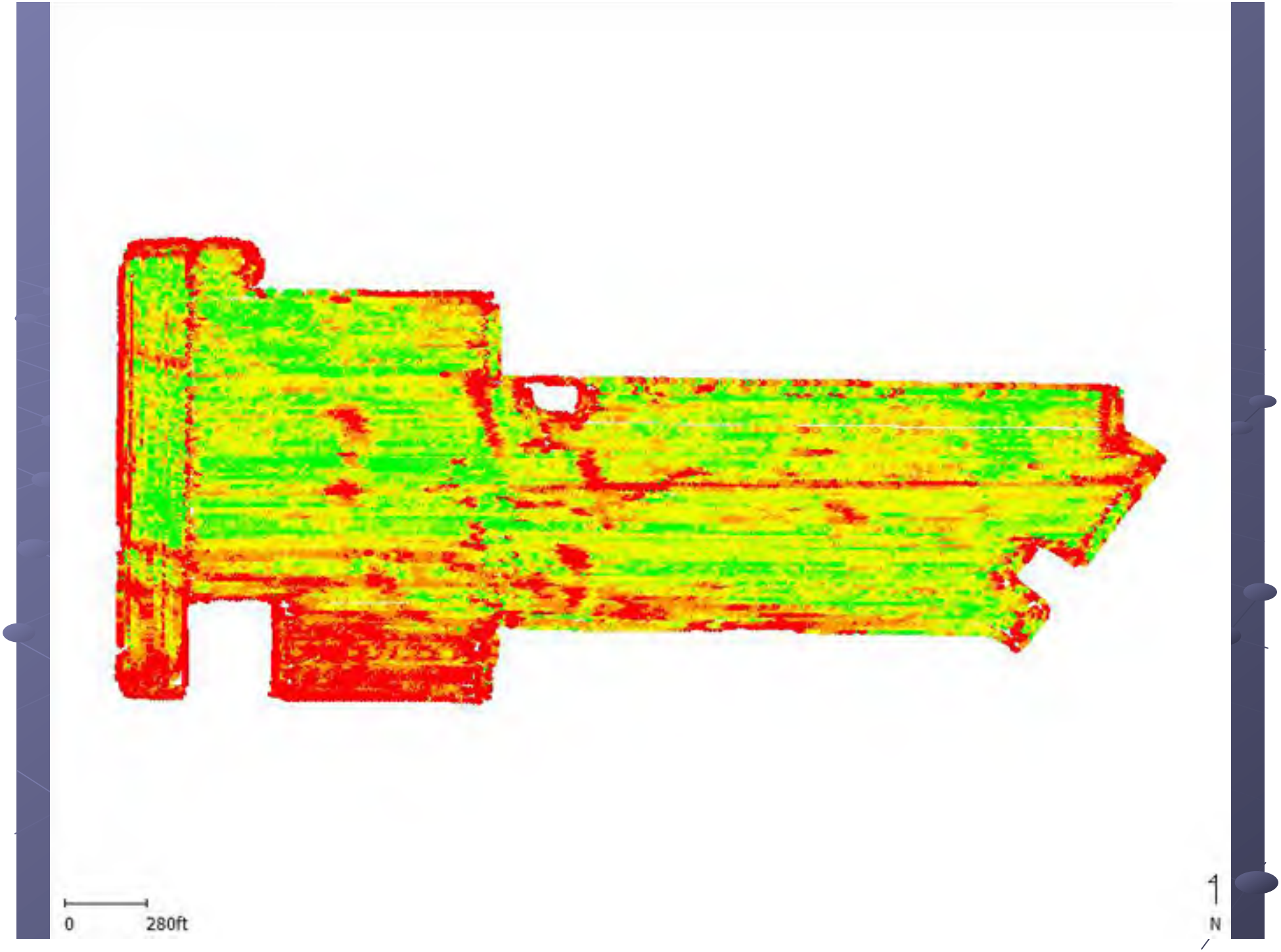
Ag Leader Technology
PF3000™
F4: HOME4
L2:
DG
YIELD avg
0.0 bu/ac
MOISTURE avg
[%] 0.0 %
SWATH
13 Ft 9 in
AVG YIELDavg
0.0 bu/ac
Harvesting:CORN
PRECISION
FARMING SYSTEM
11. Do not exceed 20 MPH.
12. Learn to operate this machine safely.
Read the Operator's Manual.


0
280ft
N


MODEL 510
EZ TRAIL


LOAD UNLOAD
HOLD
GROSS
1
2
3
4
5
6
7
8
9
0

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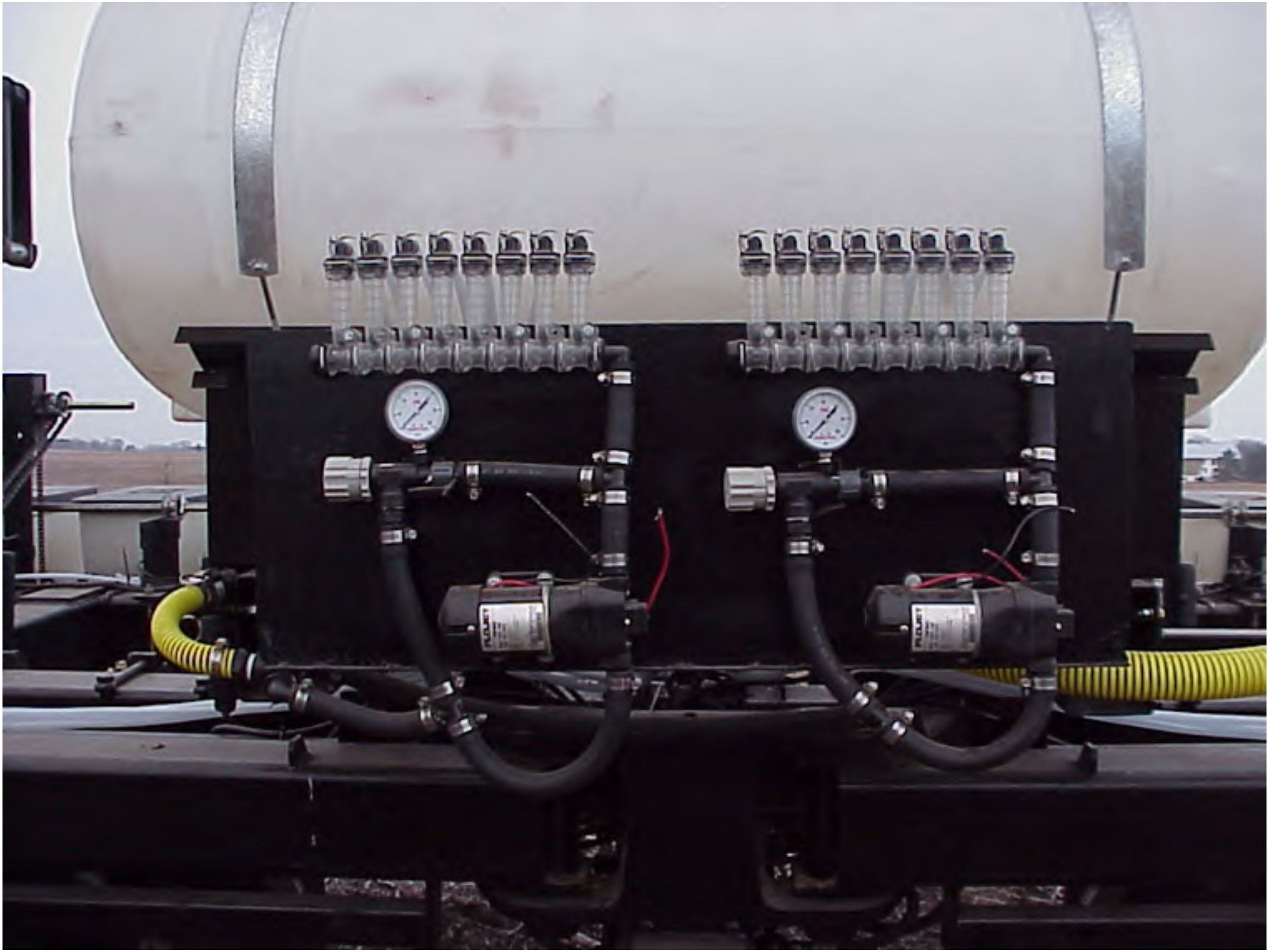
Precision Farming Tools

- Controllers – Application
  - Fixed and Variable
  - Nutrients and Lime
  - Seed
  - Herbicide


FLD AREA 3.0
60.0 PPA HOLD
HINIKER
8605
I
O
0 RATE
1 SPEED
2 TOTAL AREA
3 TOTAL VOL
4 VPM
% 5 ERROR
6 DIST.
7 FIELD AREA
8 FIELD VOL.
9 TIME DATE
MENU ENTER
MANUAL
RATE 1
RATE 2


Ag Leader
KINZE
KPM II
145200
HINIKER
8605
DirectCommand
Ag Leader


DANGER



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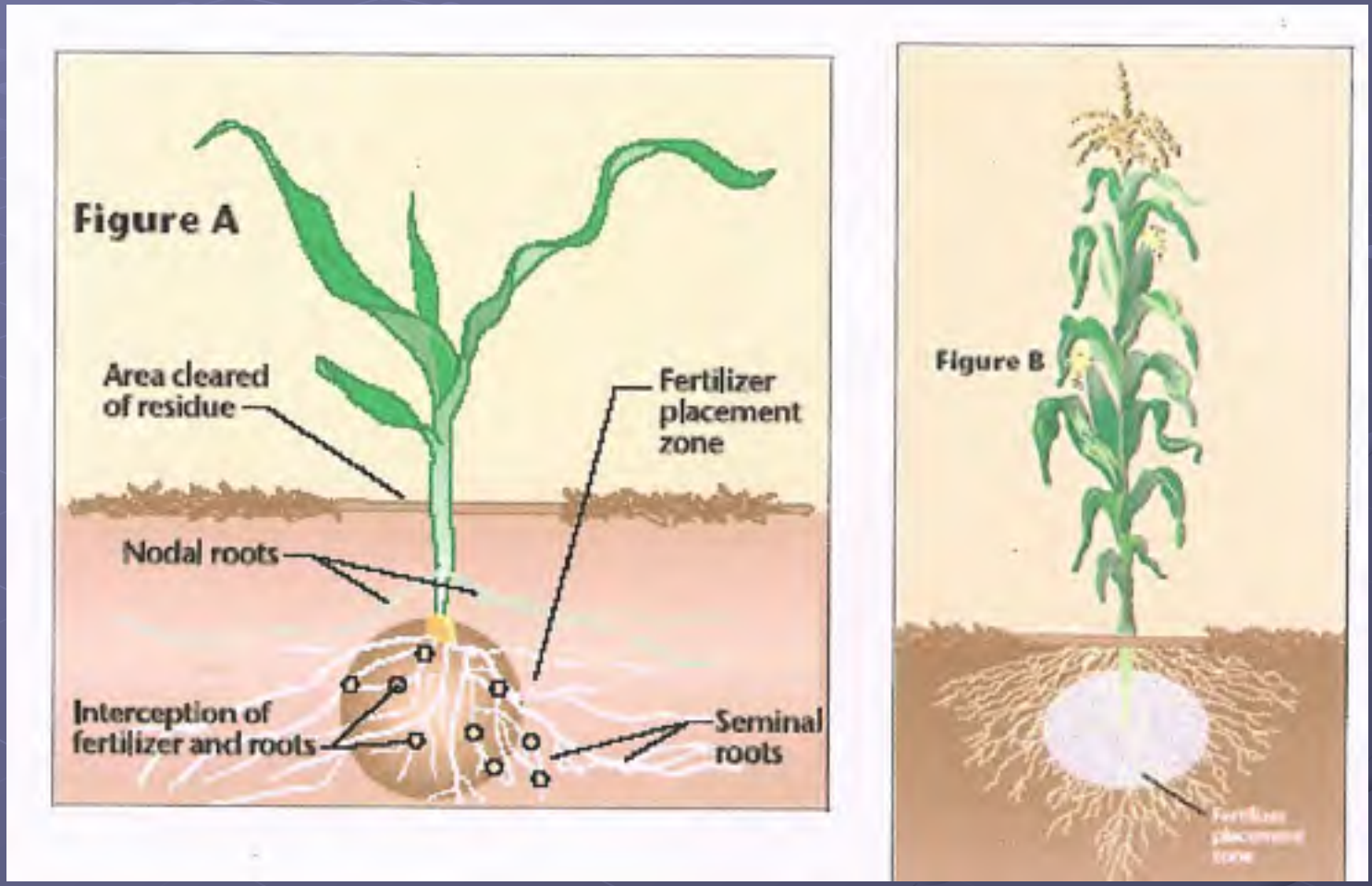
Precision Farming Tools

- Guidance and Auto Steer
  - Eliminate Markers
  - Improve Field Efficiency
  - Manage Applications
  - Manage Residue
  - Strip Till


Swath
22L
OK= Change view
p.s.i.
0 25 50 75 100


Ag Leader
150000
0.18
26077
46
150000
DirectCommand™
Ag Leader
KINZE
KPM II
146600
SCAN
POPULATION
SPACING
FIELD
TOTAL
ROW
UNITS
SPEED
VOLUME
SELECT
SPEED
SCAN
POP
SPACING
FIELD
TOTAL
CLEAR
SETUP
ENTER
EXIT
OK
ON
OFF
RATE
ERROR
MENU
ENTER

Nutrient Placement and Efficiency



Leopold Center Sustainable Agriculture Research Report

Table 1. Yield and early growth of corn as affected by four tillage systems and various fertilization strategies at the Northeast Research Farm.

	Fertilization treatments †					
Tillage	Check	Planter band	Broadcast	B+S	Deep band	D+S
	bu/acre					
Plow	177	174	181	180	173	177
Chisel	185	190	190	190	187	190
Ridge-Till *	169	169	164	174	175	180
No-Till *	177	183	178	189	187	188
Means	177	179	178	183	181	184
	g/plant					
Chisel *	3.47	4.12	4.33	4.38	4.13	4.51
Ridge-Till *	2.82	2.78	3.00	3.18	2.98	3.55
No-Till *	2.43	3.05	2.80	3.26	2.80	3.42
Means	2.91	3.32	3.38	3.61	3.30	3.83

† B+S = broadcast plus planter band, D+S = deep-band plus planter band. Early growth was not measured for the moldboard-plow tillage.

* Statistically significant differences.


ANHYDROUS
1005
AMMONIA

MACHINERY

Never a Wheel on a Row

Keep planter wheels off rows to maximize yields

BY DARRELL SMITH

Research he conducted for the University of Wisconsin (UW) and experience on his own farm convinced Jim Leverich of Sparta, Wis., that 20" corn rows pay off in yield. In a three-year Extension study, he found an 18 bu. per acre yield gain over 30" rows.

Studies conducted by Marion Calmer of Calmer Ag Research in Alpha, Ill., persuaded Leverich that keeping wheel traffic off the row was a key to reaping the yield increase.

So when Leverich decided to build a new planter, keeping wheel traffic off the row was a must. Another—and the reason he built rather than bought—was that he wanted sixteen 20" rows.

The planter that Leverich built applies pop-up fertilizer and no-tills through hefty volumes of corn residue (he sometimes harvests 200 bu. per acre), as long as the stalks are dry. FARM JOURNAL named the machine a $500 winner in the magazine's 2004 "I Built the Best" contest.

PHOTO BY JIM MEYER

A 16-row, 20" planter built by farmer and Extension researcher Jim Leverich no-tills through heavy residue and never plants in a wheel track.

added a third bar, making a double

cause the carrying wheels are in front


Yetter

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Precision Farming Tools

- Soil Management Zones and Sampling
  - Grid or Management Zone Samplings
  - Soil Type and Quality Maps
  - Conductivity Sampling
  - Aerial Imagery
  - Other

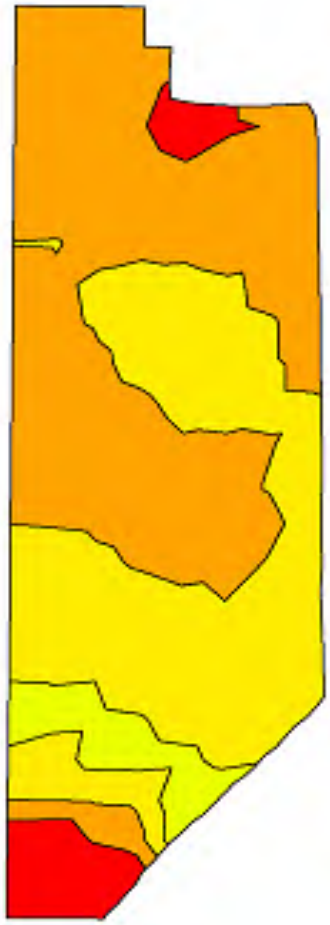
Table 2. Standard Vs. Grid Sampling Statistics on a 54-Acre Example Field

Sampling Type	Total	Acres/ Samples	Total Ave. K Sample	Standard Deviation	Coefficient of Variation	Field K2O lb
Grid	27	2	157	28	57.7	6,000
Standard	7	7.7	157	17	32	5,940

Potassium (K) Soil Test Results with Standard Vs. Grid Sampling on 54-Acre Example Field

		K2O/Acre	Standard (7 Samples)		Grid (27 Samples)	
Soil Test	K Range	Fert Rec	Samples	%	Samples	%
0-99	V. Low	250	0	0	0	0
100-124	Low	200	0	0	2	7.5%
125-149	Optimum	150	2	28.5%	12	44.3%
150-174	High	100	4	57.1%	7	26.0%
175-199	Very High	50	1	14.3%	3	11.1%
200+	Ext High	0	0	0		11.1%

Soil Sampling 2009 - Wag E



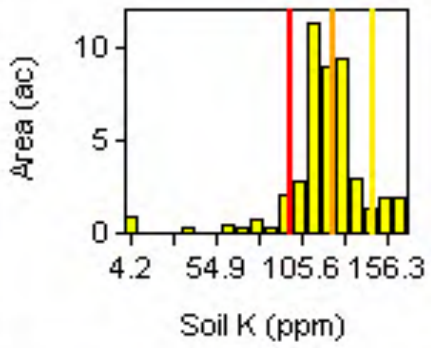
0 190ft

N

Grower : Leverich Farms
Farm : Wagner
Field : Wag E
Year : 2009
Operation : Soil Sampling
Crop / Product : NO Product
Op. Instance : Sampling - 1
Avg.Soil OM : 1.300 %
Avg. Soil P1 : 28.55 ppm
Avg.Soil K : 120.82 ppm
Avg. Soil CA : 0.00 ppm
Avg. Soil pH : 5.664 (1)
Avg. Soil BpH : 0.00 (1)
Avg.Soil CEC : 0.00 meq/100g
Avg.Soil Nitrate : 0.00 ppm
GPS Count : 22

Soil K
(ppm)

200.00 - 500.00	(0)
175.00 - 200.00	(0)
150.00 - 175.00	(1)
125.00 - 150.00	(3)
100.00 - 125.00	(2)
0.00 - 100.00	(2)



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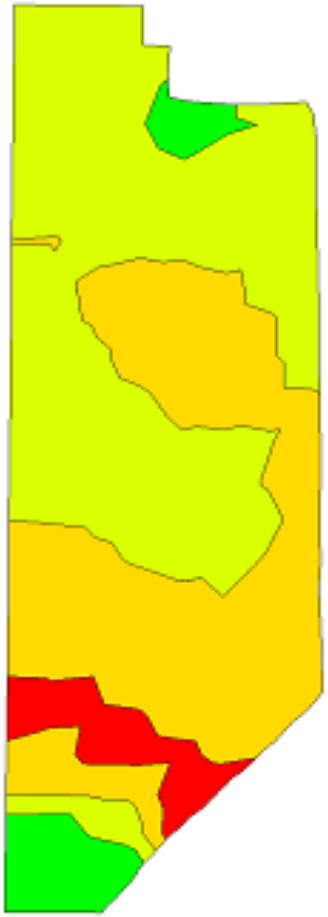
Ag Leader
KINZE
KPM II
145200
HINIKER
8605
DirectCommand
Ag Leader

Fertilizing Prescription (Dry) 2010 - Wag E



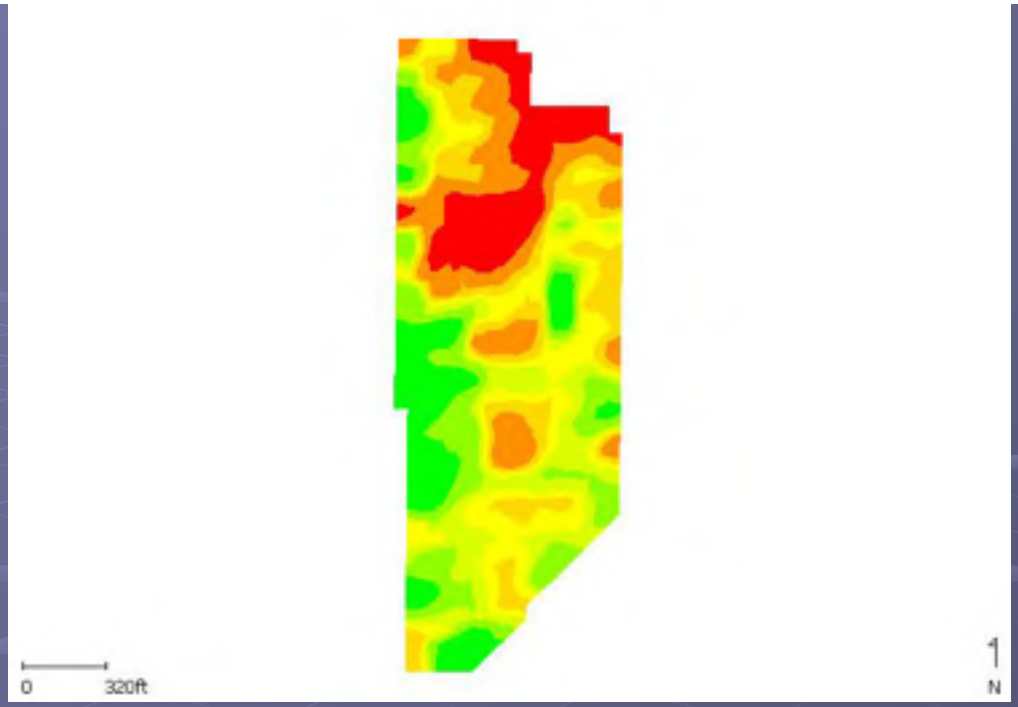
0 190ft

N

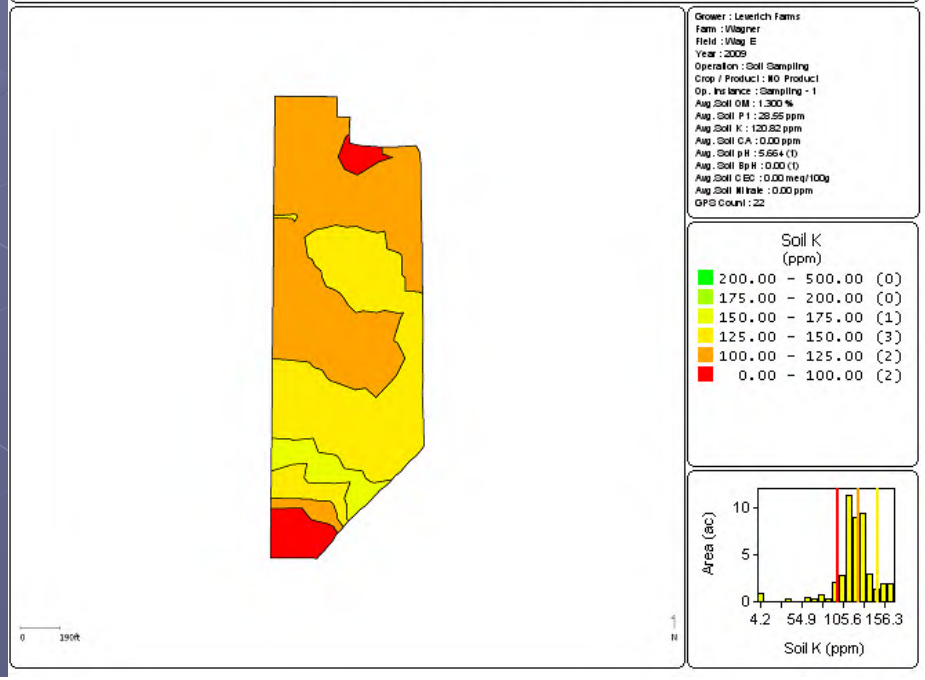
Grower : Leverich Farms
Farm : Wagner
Field : Wag E
Year : 2010
Operation : Fertilizing Prescription (Dry)
Crop / Product : NO Product
Previous Years Crop(s) : Soybeans
Op. Instance : Instance - 1
Area : 32.59 ac
Total Amount : 5,808.5 lb
Average Rate : 178.24 lb/ac
Minimum Rate : 100.00 lb/ac
Maximum Rate : 250.00 lb/ac
Count : 8

Target Rate(Mass)
(lb/ac)

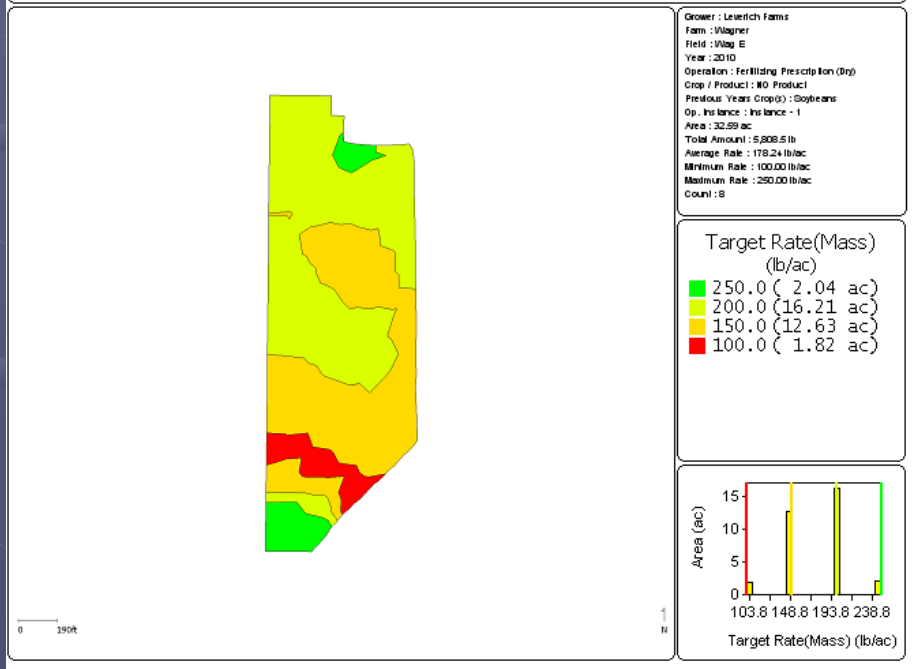
250.0 (2.04 ac)
200.0 (16.21 ac)
150.0 (12.63 ac)
100.0 (1.82 ac)



Soil Sampling 2009 - Wag E



Fertilizing Prescription (Dry) 2010 - Wag E



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ASGROW
SOYBEAN
SEED

2007 Corn Plot

Leverich Farms

Extremely Dry in July and Early August

Brand	Hybrid	Mat	Rep 1 Yield	Rep 1 Moist	Rep 2 Yield	Rep 2 Moist	Rep 3 Yield	Rep 3 Moist	Average Yield	Average Moist	Field Data
Carharts	1889 RR	90	105.9	13.6	127.4	13.0	116.8	16.0	116.7	14.2	*Spread Fert April 16th*
Croplan	314 TS	92	115.5	14.4	131.3	13.3	144.3	13.5	130.3	13.7	*100 lb Potash*
Carharts	1857 RB	90	108.4	14.3	121.1	13.1	139.6	13.7	123.0	13.7	*100 lb AMS*
Carharts	1995 VT3	95	110.6	13.8	147.0	12.7	137.3	12.7	131.6	13.1	
Carharts	1956 RR	95	105.9	14.1	119.4	13.1	132.5	13.4	119.3	13.5	*Applied N on April 21st*
Croplan	364TS	96	121.5	14.4	139.3	13.6	153.1	13.7	138.0	13.9	*Anhydous Ammonia*
Croplan	3688 RB	96	125.6	14.1	166.1	13.6	164.5	13.4	152.1	13.7	*135 lb Nitrogen*
Croplan	3456 RB	96	135.8	14.6	159.3	13.6	150.3	13.7	148.4	14.0	
Midwest	69704 VT3	97	141.6	14.3	168.6	13.6	147.6	13.5	152.6	13.8	*Planted April 28th*
Pioneer	37Y13 RR	97	128.5	17.8	162.5	16.1	135.8	16.5	142.3	16.8	*Pop 31600 in 20" Rows*
Dairyland	9497 TS	97	129.5	14.6	129.1	13.8	131.9	14.0	130.2	14.1	*Popup 9 gal 10-34-0*
Dairyland	7196 RB	97	135.3	14.1	150.1	13.6	148.6	13.7	144.7	13.8	
Croplan	3824 TS	98	135.8	14.0	145.0	14.2	132.6	14.5	137.8	14.2	*Sprayed May 21st*
Midwest	69802	98	148.4	14.4	164.5	14.1	143.5	13.9	152.1	14.1	*1 qt Glyphosate*
Croplan	388 RRBT	99	153.5	12.6	177.0	14.1	168.6	13.7	166.4	13.5	*.75 qt Atrazine*
Pioneer	37F75	99	146.4	15.9	164.0	16.1	134.5	16.0	148.3	16.0	
Midwest	70103 TS	100	144.6	14.8	174.0	14.8	149.5	14.6	156.0	14.7	*Sprayed June 15th*
Carharts	1100 RB	100	151.5	14.7	173.4	14.5	142.4	14.3	155.8	14.5	*1 1/2 pt Glyphosate*
Carharts	1960 RB	100	136.4	15.2	156.3	15.1	137.1	14.6	143.3	15.0	
Dairyland	9201 TS	100	136.5	15.0	164.5	15.7	131.9	16.0	144.3	15.6	*Harvested Oct 27th*
Carharts	1100 VT3	100	148.5	14.4	156.6	14.2	140.4	14.2	148.5	14.3	
Dekalb	5139 TS	101	183.0	15.0	188.6	14.9	161.8	14.9	177.8	14.9	*Previous Crop*
Dekalb	5240 TS	102	177.0	14.5	170.1	14.3	145.8	14.4	164.3	14.4	*Soybeans on Rep1 & 3*
Dekalb	5259 VT3	102	169.4	15.2	154.0	13.8	149.6	13.9	157.7	14.3	*Corn on Rep 2*


LOAD UNLOAD
HOLD
GROSS
1
2
3
4
5
6
7
8
9
0

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