

Technologies in Agriculture: Precision Cropping

Ryan Adams
Manager, Agronomic Services
Northern Alberta Division
Crop Production Services Canada



Agenda

- Machinery Advances
 - Sprayers
 - Seeding Tools
 - Harvesters
- Data Sources
- Big Data



Advancements in

SPRAYING





Source: <http://www.cropcareequipment.com/img/aboutUs.jpg>



Source: www.deere.ca

JOHN DEERE

Rate 1
3.2

Rate 2
7.5

Rate 3
10.0

(gal/ac)

3.2 gal/ac



34 psi

Temperature (C)

18.4

DeltaT (C)

6.6

Wind Speed (mph)

8.7

W

1:33pm



BoomTrac Pro

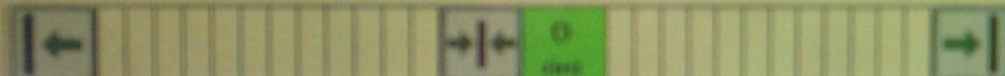
L
50

C
50

R
46

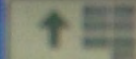
(in)

Ground

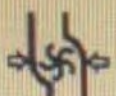



97 W Turn

120.5 (ft)



 
(gal/ac)

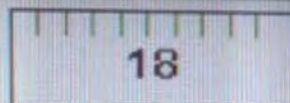

0 
0 psi 



R3 R4 R5


Ground



4538.7 (ft)


30 18 100 % 

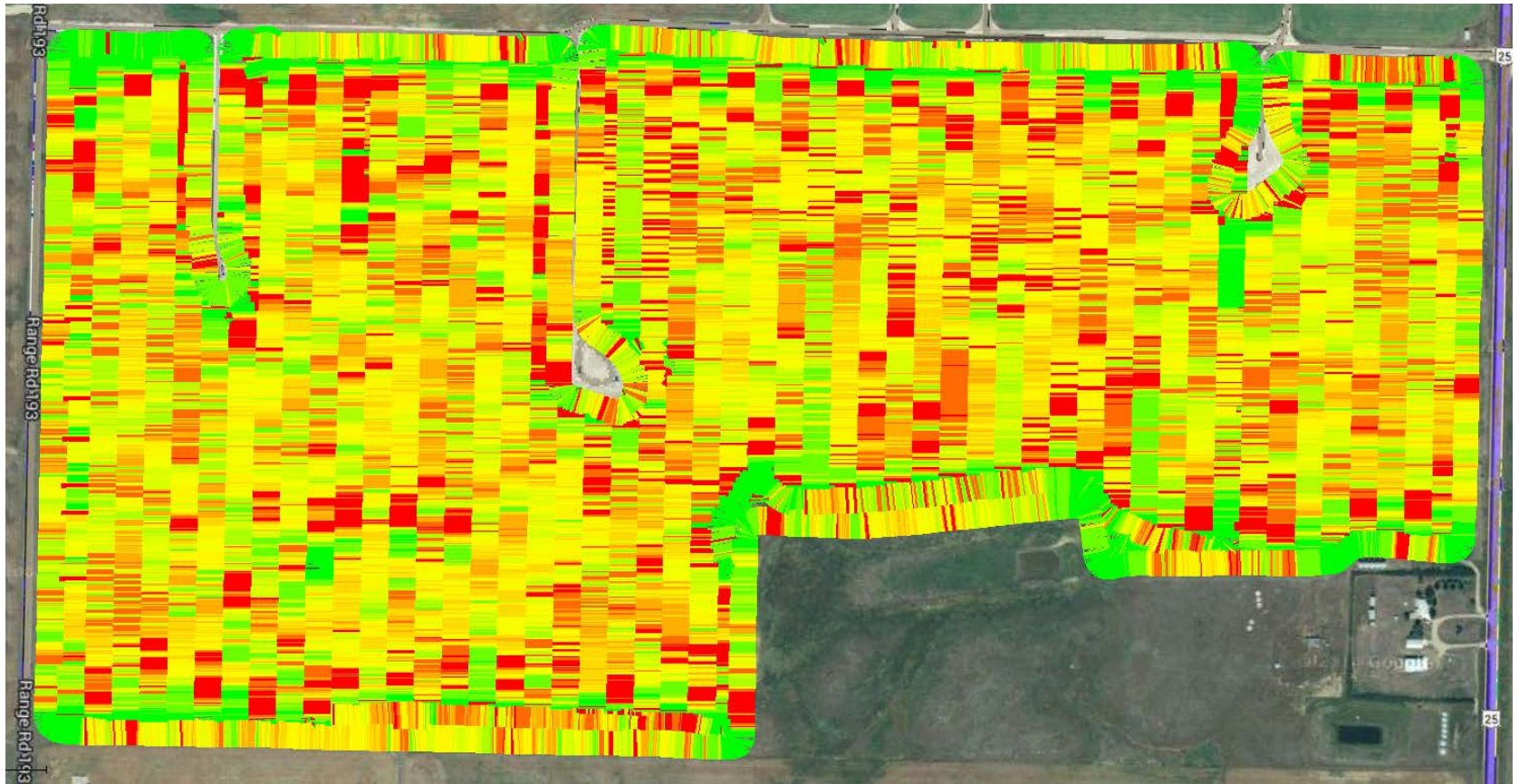
1453.6 
ac

0.0  
gal/ac

0.0  
gal/ac

10:24pm

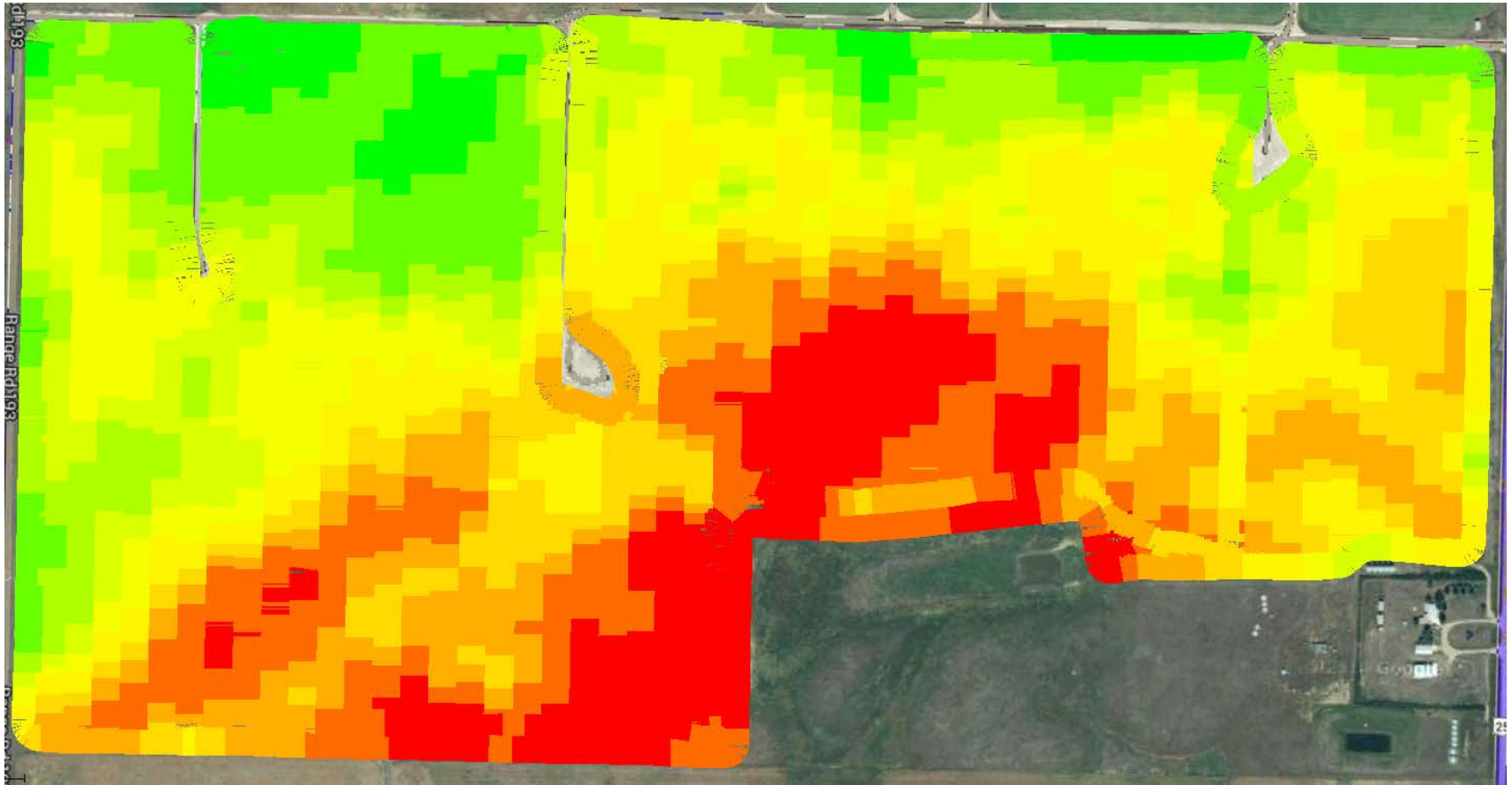
Spraying As-Applied Map



Rate Applied(Liquid vol)
(gal(US)/ac)

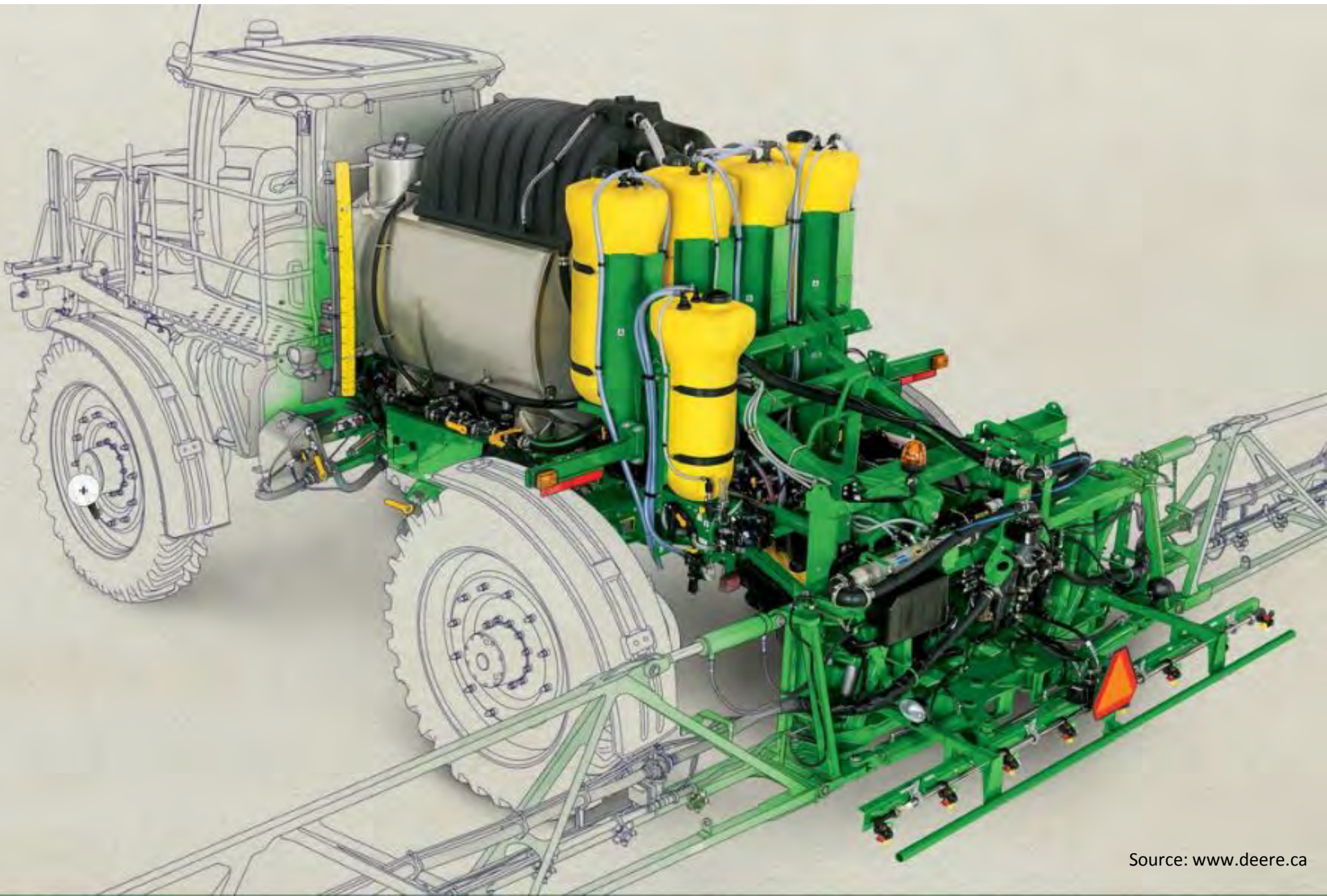
■	4.25 - 160.00	(14.63 ac
■	3.88 - 4.25	(25.59 ac
■	3.81 - 3.88	(29.24 ac
■	3.76 - 3.81	(29.42 ac
■	3.73 - 3.76	(29.53 ac
■	3.69 - 3.73	(29.84 ac
■	3.65 - 3.69	(29.69 ac
■	3.60 - 3.65	(29.60 ac
■	3.52 - 3.60	(28.89 ac
■	0.67 - 3.52	(24.82 ac

Spraying Elevation Map



Elevation
(ft)

2,729.69	-	2,736.58
2,725.45	-	2,729.69
2,721.99	-	2,725.45
2,719.52	-	2,721.99
2,717.11	-	2,719.52
2,713.49	-	2,717.11
2,711.37	-	2,713.49
2,709.63	-	2,711.37
2,707.08	-	2,709.63
2,703.04	-	2,707.08









SEEDING

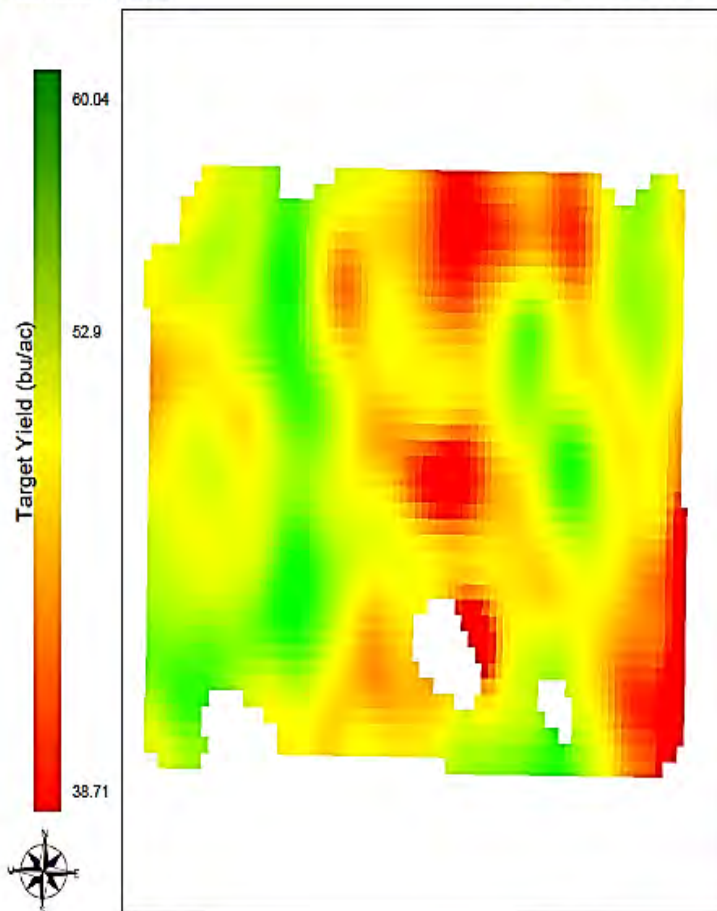




Source: Emile deMilliano



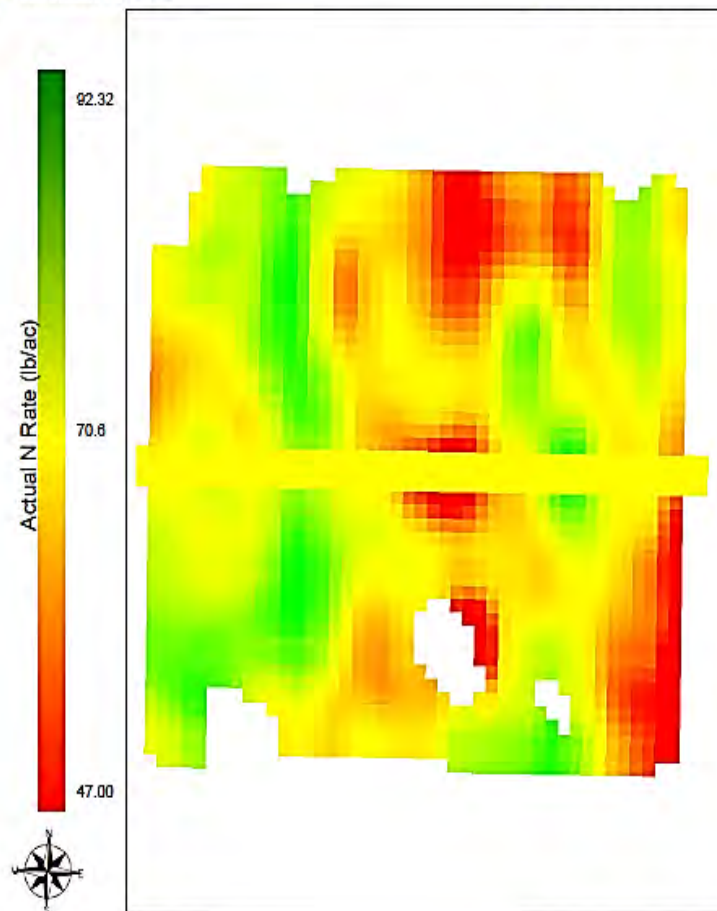




Corporation: Spiller Farms
Farm: Spiller Farm
Field: Lois SE 23 45 16 W4
Area: 150.7 ac
OM: 8%
Soil N Supply: 25
Other N Supply: 31

Crop: Canola
Crop Price: \$12.50
Base Yield: 44 bu/ac
Adjusted Yield: 52.9 bu/ac
Yield Difference: 8.9 bu/ac

Image Date: 7/24/2010



Corporation: Spiller Farms
Farm: Spiller Farm
Field: Lois SE 23 45 16 W4
Area: 150.7 ac
Guaranteed Analysis: 24 - 0 - 0 - 7
Typical N Rate: 70 lbs/ac
Prescription N Rate: 70.6 lbs/ac

Min. Product Rate: 18.3 gal/ac
Avg. Product Rate: 27.4 gal/ac
Max. Product Rate: 35.9 gal/ac
Total Product: 4,136.61 gal

Net VR Benefit: \$110.30/ac



Photosynthesis & Solar Energy



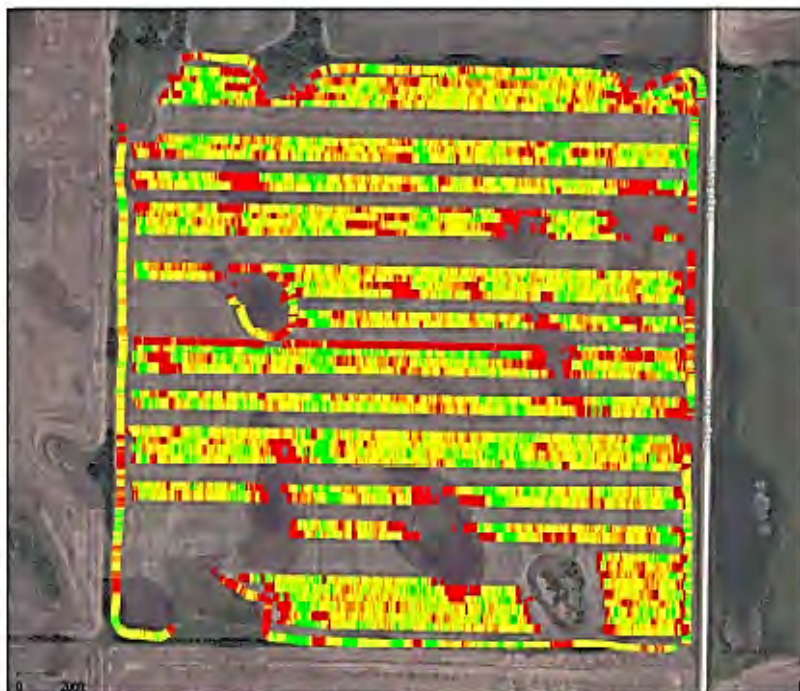








Yield Data

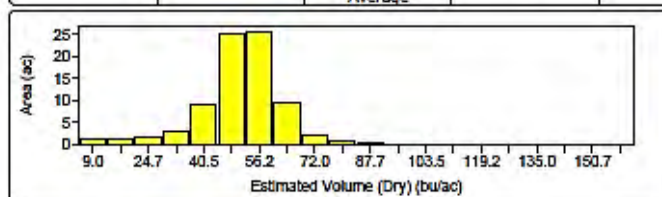


Grower : Spiller Farms
Farm : Spiller Farm
Field : Lois SE 23 45 16 W4
Year : 2013
Operation : Grain Harvest
Crop / Product : L135
Op. Instance : Harvest - 1
Area : 79.97 ac
Avg. Yield : 50.98 bu/ac
Avg. Moisture : 5.608 %

Estimated Volume (Dry) (bu/ac)	
63.60 - 1,927.82 (7.20 ac)	
57.78 - 65.80 (11.79 ac)	
54.28 - 57.78 (11.92 ac)	
51.14 - 54.28 (12.03 ac)	
47.77 - 51.14 (12.04 ac)	
42.46 - 47.77 (12.05 ac)	
5.08 - 42.46 (12.95 ac)	

Spiller Farms | Spiller Farm | Lois SE 23 45 16 W4 2013 | Grain Harvest | L135 | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:Harvest	72.44	5.502	191,776	3,687.5	50.90	25/09/2013
L0:Harvest	7.527	6.623	20,225	388.89	51.67	26/09/2013
Totals	79.97	5.608 Average	212,001	4,076.4	50.98 Average	25/09/2013 - 26/09/2013



echelon
THE NEXT LEVEL OF AGRICULTURAL SOLUTIONS

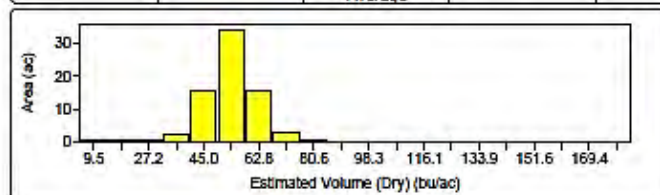


Yield Data



Spiller Farms | Spiller Farm | West of Jims NE 22 45 16 W4 2013 | Grain Harvest | L135 | Harvest - 1

Dataset	Area	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:10/10/2013	72.60 ac	5.934	201,312	3,870.9	53.32	10/10/2013
Totals	72.60	5.934 Average	201,312	3,870.9	53.32 Average	10/10/2013



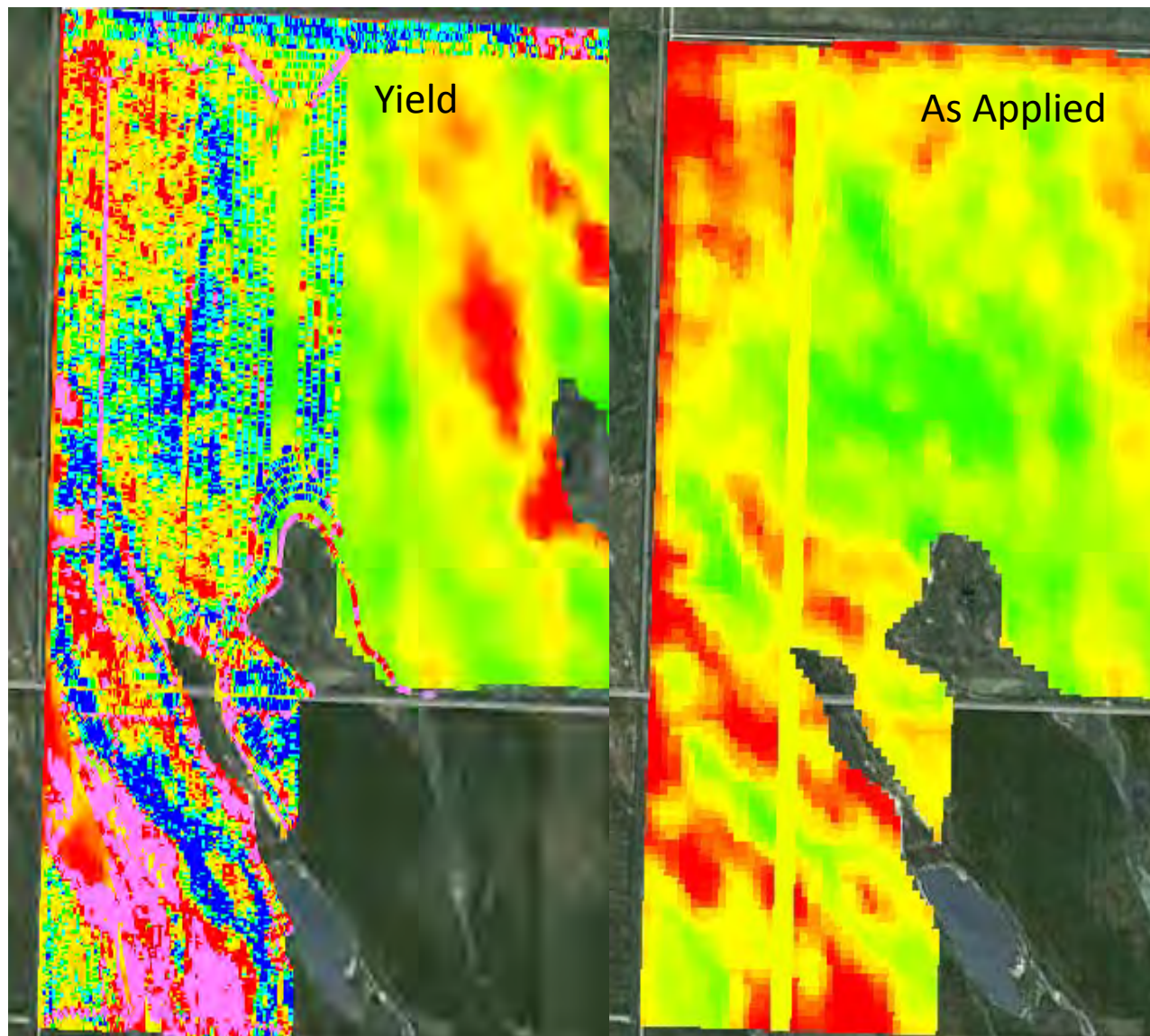
echelon
THE NEXT LEVEL OF AGRICULTURAL SOLUTIONS



DATA SOURCES



West Place NH SW 2 Sec 3 SE 11 16 25 W4



Crop
Production
Services



Data Sources

- Seeding
 - Fertilizer rates as applied
 - Seed rates as applied
- Spraying
 - Products applied
 - Rate applied
 - Placement
 - Water Volume
 - Time and Date of application
- Harvest Data
 - Yield
 - Moisture



What can we ask of

BIG DATA



IMPROVEMENTS REQUIRED



Acknowledgements

Emile deMilliano *Manager, Training CPS*
Sime Farms *Fort Saskatchewan AB*
Tripple T Dairy *Sturgeon County AB*
John Deere Canada



QUESTIONS?

