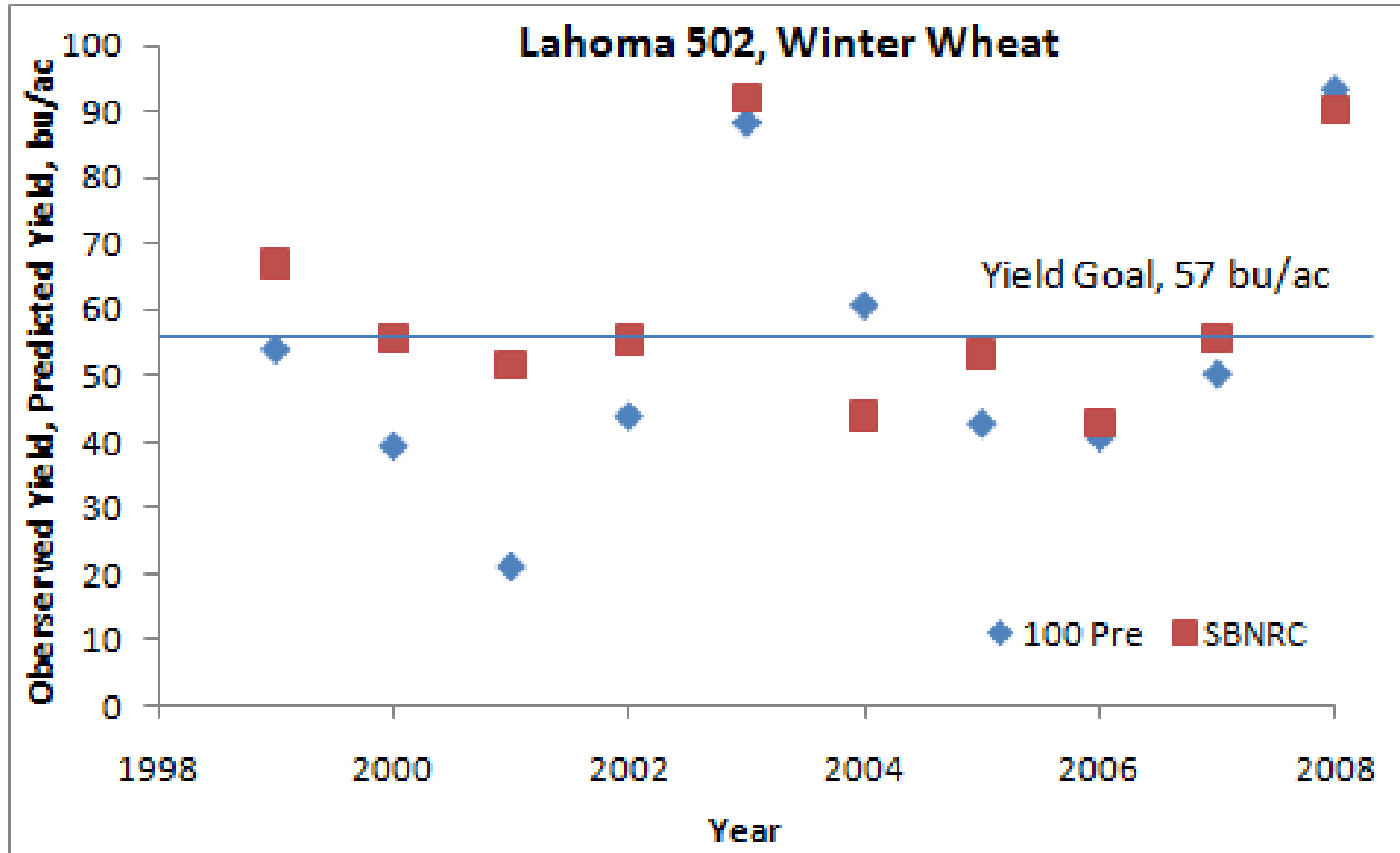


RT 200 Slides

Sensor Based N

- Give a value to N response
 - RI 1.1 is 10% increase 1.2 is 20% increase.
- Predict Yield with and without extra N
- How its done
 - N-Rich Strip, area with high N
 - Farmer Practice, everything outside of the N-Rich
 - N Rich YP 50 bu/ac
 - FP YP 40 bu/ac

Yield Prediction



SBNRC ($YPO * RI = YPN$)

100 Pre (100 lbs N/ac applied preplant)

Sensors and No-till

- There is no cookie cutter recipe
- No Text Book
- Learn from others Mistakes
- Adopt to your farm, soil, machinery, management and mindset.
- Do not go 100% the first year, but put out 100% of the strips.
- Art

Green Seeker Impact JWK

Year	Urea	Lb N	Application			Savings	%applied	Savings
	\$/ton	/ Acre	\$/acre	Total \$/a	46/lb N	\$/acre		/All acres
2004	\$325	40	\$ 2.25	\$16.38	\$18.50	\$ 2.12	21%	\$15.09
2005	\$325	25	\$ 2.25	\$11.08	\$18.50	\$ 7.42	61%	\$11.70
2006	\$350	40	\$ 2.25	\$17.47	\$19.75	\$ 2.28	38%	\$13.19
2007	\$375	22	\$ 2.25	\$11.22	\$21.00	\$ 9.78	100%	\$ 9.78
2008	\$550	23	\$ 2.25	\$16.00	\$29.75	\$13.75	52%	\$21.45

Est. Hourly Wage

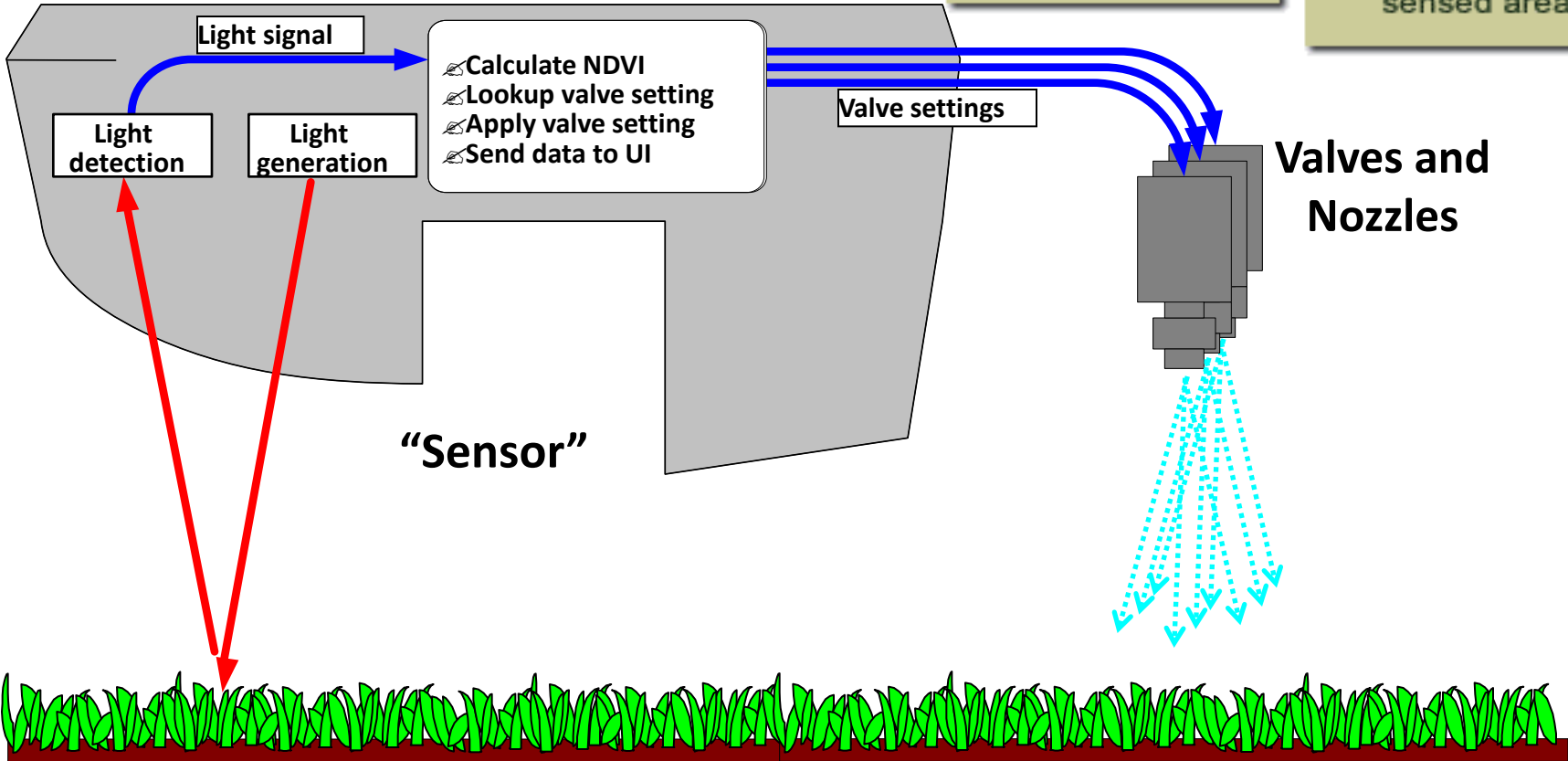
- About 8 hours per year to put out strips
- About 8 hours per year to read strips.
- 80 hours of work over 5 year period
- Saved in fertilizer and application costs over 5 years
- \$384,000
- \$4,800 per hour

Sensor Function



Optical sensor measures nitrogen needs in a 2 by 2 foot area

Spray nozzles apply fertilizer in a previously sensed area



2009	<i>Farmer Practice</i>				<i>SBNRC</i>			
Location	Nrate	Yield	Protein	NUE	Nrate	Yield	Protein	NUE
Site 1	39	23	11.91	0.18	48	26	12.08	0.22
Site 2	36	53	13.51	0.65	49	54	13.68	0.54
Site 3	84	39		0.00	39	33		0.00
Site 4	60	52	11.69	0.28	24	44	10.66	0.12
Site 5	60	59	14.42	0.02	7	61	14.54	0.72
Site 6	60	66	11.69	0.35	38	62	10.83	0.25
Site 7	33	29	10.15	0.20	59	37	10.20	0.26
Site 8	28	42	10.26	0.48	59	48	11.12	0.41
Averages	50	45	11.95	0.27	41	46	11.87	0.31
2010								
Location	Nrate	Yield	Protein	NUE	Nrate	Yield	Protein	NUE
Site 1	160	63	15.16	0.10	23	62	13.05	0.06
Site 2	60	39	12.48	0.19	49	40	12.60	0.27
Site 3	60	40	12.20	0.41	72	42	11.86	0.35
Site 4	50	91	13.57	0.12	34	91	14.25	0.39
Site 5	40	65	10.89	0.08	48	67	11.06	0.13
Site 6	50	45	15.05	0.02	12	46	14.59	0.07
Averages	70	57	13.22	0.15	40	58	12.90	0.21
Total	59	50	12.54	0.22	40	51	12.35	0.27

Performance of current soil test Based N Fertilizer Recommendations: 2006-2008

Location	Year	Yield Goal	Actual Yield	Soil Test Rec.	Actual N Resp.	Soil Diff.
Belleville	2006	100	96	40	0	40
Manhattan	2006	140	155	60	33	27
Partridge	2006	80	32	42	55	-13
Tribune	2006	80	128	30	15	15
Manhattan	2007	120	109	130	105	25
Partridge	2007	80	70	40	20	20
Tribune	2007	80	79	54	0	54
Manhattan	2008	140	128	77	45	32
Ottawa	2008	80	64	56	60	-4
Partridge	2008	80	123	41	15	26
Mean difference						26

Performance of Sensor Based N Fertilizer Recommendations: 2006-2008

Location	Year	Sensor Yield	Actual Yield	Sensor Rec.	Actual N Resp.	Sensor Dif
Belleville	2006	95	96	0	0	0
Manhattan	2006	160	155	33	33	0
Partridge	2006	48	32	57	55	2
Tribune	2006	130	128	24	15	9
Manhattan	2007	111	109	98	105	-7
Partridge	2007	77	70	15	20	-5
Tribune	2007	71	79	0	0	0
Manhattan	2008	151	128	45	45	0
Ottawa	2008	58	64	55	60	-5
Partridge	2008	140	123	30	15	15
Mean difference						4.3

Dr. Dave Mengel and Mr. Drew Tucker

Sensor Based N Fertilizer Recommendation Summary 2006-2008

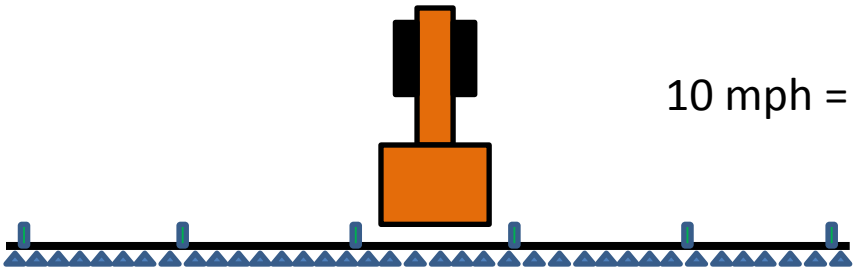
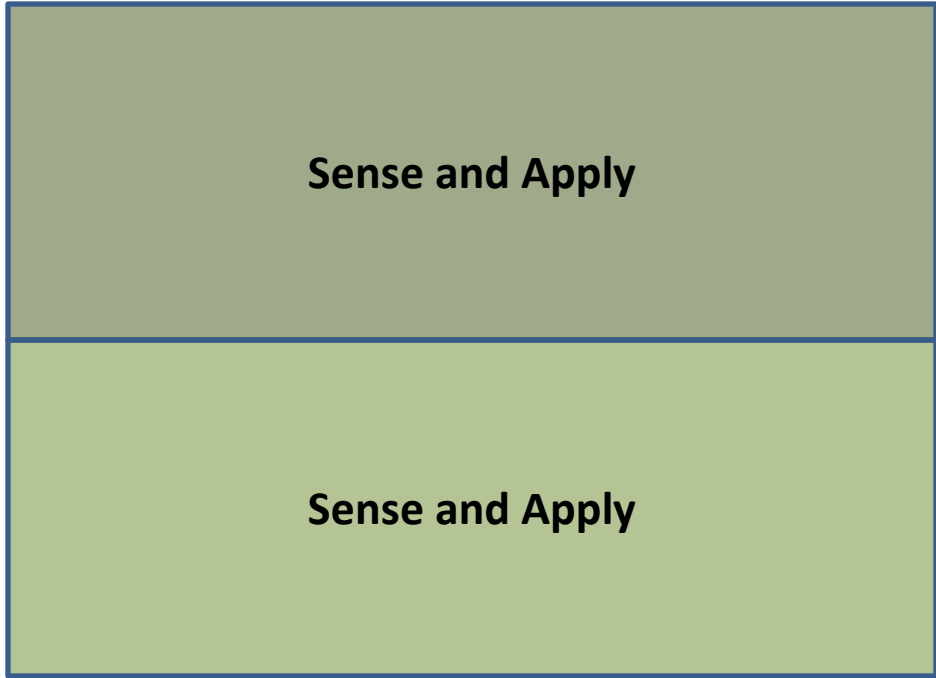
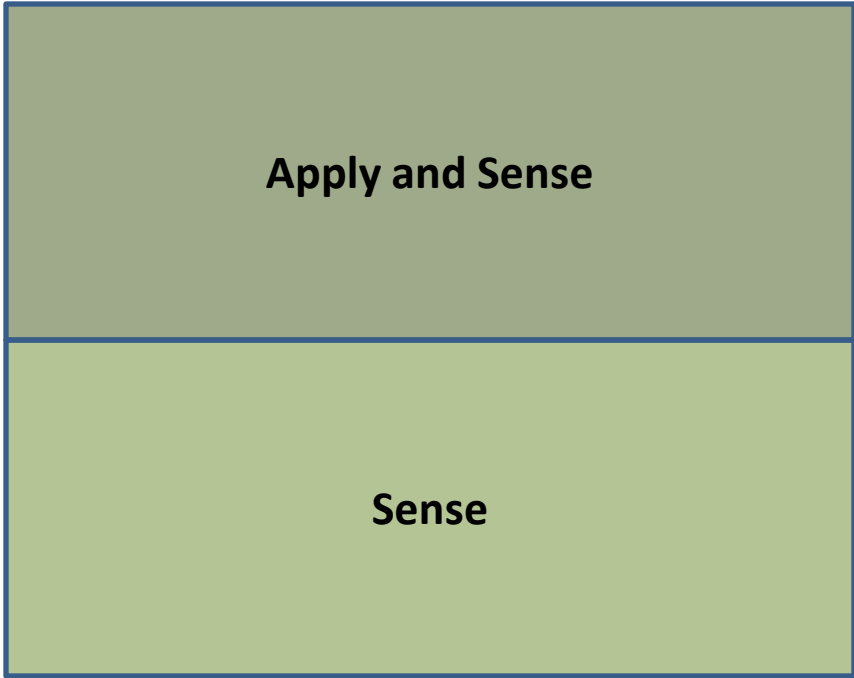
Location	Year	Sensor Yield	Actual Yield	Soil Test Rec.	Sensor Rec.	Actual N Resp.	Soil Diff.	Sensor Diff.
Belleville	2006	95	96	40	0	0	40	0
Manhattan	2006	160	155	60	33	33	27	0
Partridge	2006	48	32	42	57	55	-13	2
Tribune	2006	130	128	30	24	15	15	9
Manhattan	2007	111	109	130	98	105	25	-7
Partridge	2007	77	70	40	15	20	20	-5
Tribune	2007	71	79	54	0	0	54	0
Manhattan	2008	151	128	77	45	45	32	0
Ottawa	2008	58	64	56	55	60	-4	-5
Partridge	2008	140	123	41	30	15	26	15

2009 Corn Trials

Treatment	Avg Profit	Avg Yield	Total N-rate (lbs/ac)
Farmer Practice	699.19	195.36	235
SBNRC Flat Rate	718.68	189.73	115
RT-200 VRT	731.59	190.14	82.7
N-Rich	688.53	208.88	420

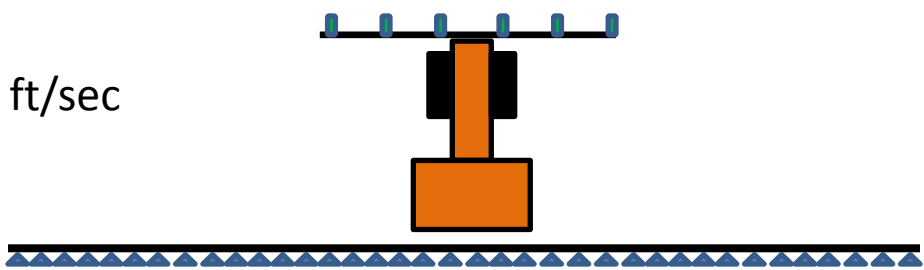
Treatment	Avg Profit	Avg Yield	Total N-rate (lbs/ac)
Farmer Practice	729.70	199.92	200
SBNRC Flat Rate	754.61	198.71	115
RT-200 VRT	769.43	201.13	100.4
N-Rich	706.52	207.26	350

Treatment	Avg Profit	Avg Yield	Total N-rate (lbs/ac)
Farmer Practice	825.92	223.98	200
SBNRC Flat Rate	835.21	215.80	80
RT-200 VRT	785.40	201.62	60.2
N-Rich	777.23	224.93	350



Sensors attached to Spray boom

Notes:
Application is Delayed

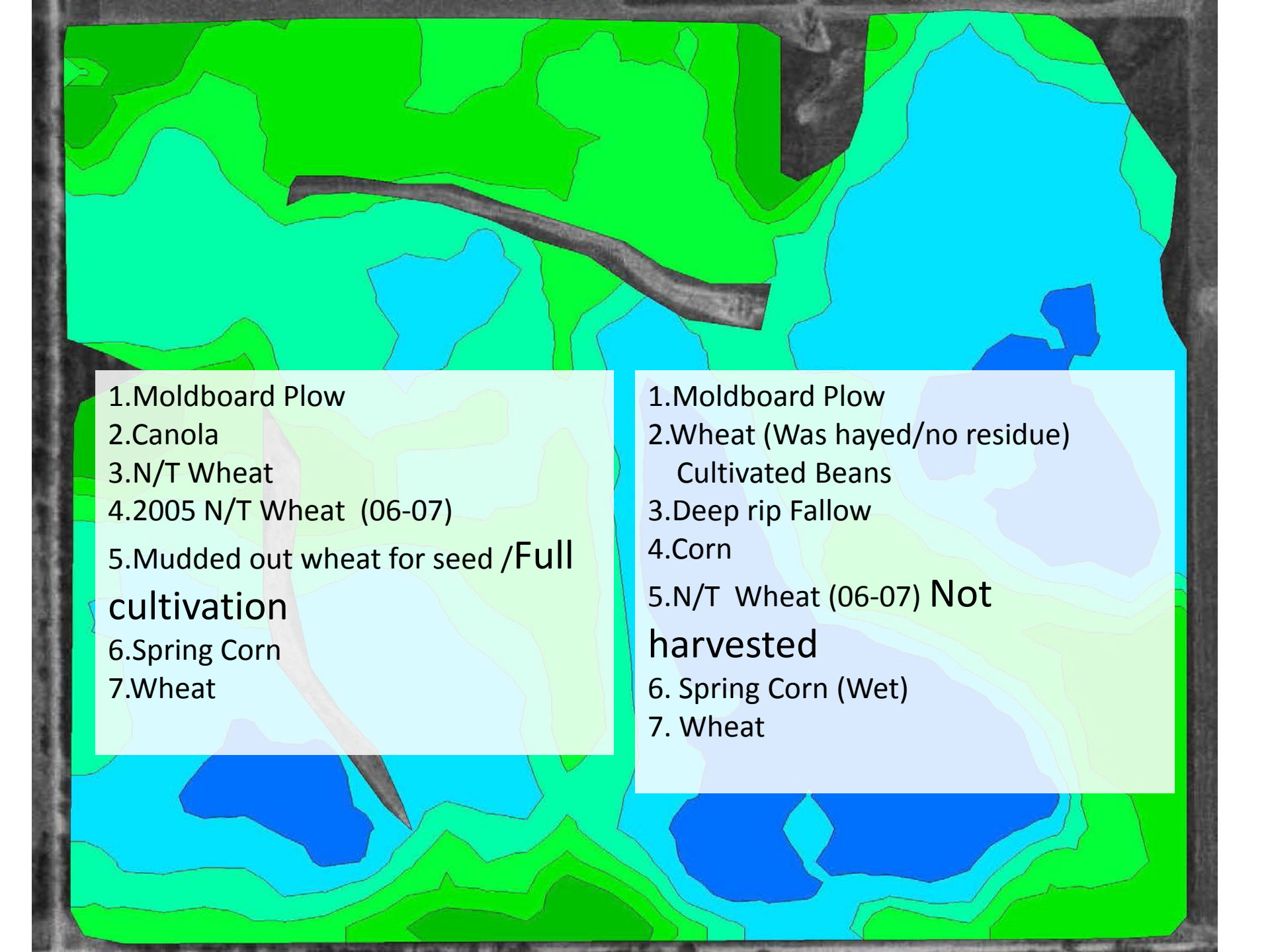


Sensors attached to boom mounted on front

Notes:
Sensing Width

Corn, Soil Type

The producer had applied an N-rich strip that ran the length of the field. At the time of sensing, eight leaf stage, the N-Rich strip stood out from the rest of the field. However there was a significant soil texture change and the eastern third of the field consisted of a much more course textured soil. Viewing the N-rich strip this change was very evident. In the finer soil the field was much less responsive and the N-Rich strip did not present the same significant difference as it did in the eastern 1/3. The sensor readings were individually collected from the N-rich strip and farmer practice within the fine and course soils. The NDVI's indicated an RI of 1.15 from the fine soil and an RI of 1.3 from the course textured soil with recommended N sidedress rates 20 and 60 lb N ac⁻¹ respectively. With this knowledge the producer could have applied the N according to management zones as the sensor recommended. However this producer decided to apply a flat rate of 40 lb N ac⁻¹ across the field, acknowledging that he was over applying to 2/3's of the field while under apply and losing yield on the additional 1/3.

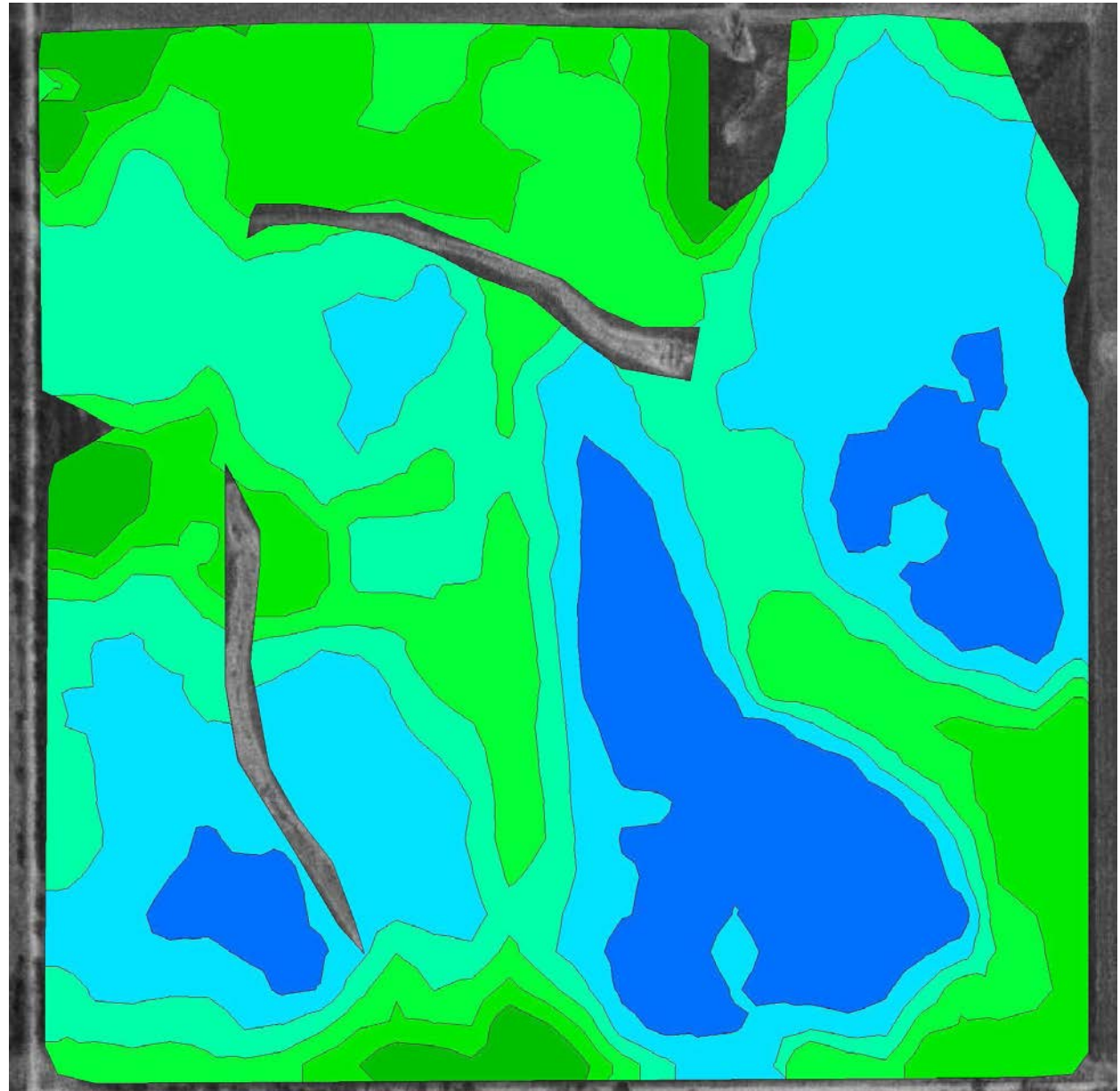
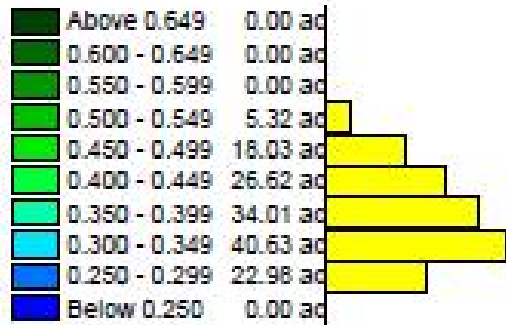
- 
1. Moldboard Plow
 2. Canola
 3. N/T Wheat
 4. 2005 N/T Wheat (06-07)
 5. Mudded out wheat for seed /Full cultivation
 6. Spring Corn
 7. Wheat

1. Moldboard Plow
2. Wheat (Was hayed/no residue)
Cultivated Beans
3. Deep rip Fallow
4. Corn
5. N/T Wheat (06-07) Not harvested
6. Spring Corn (Wet)
7. Wheat

SE of Billings, OK NDVI

March 7, 2009
98 GDU > 0

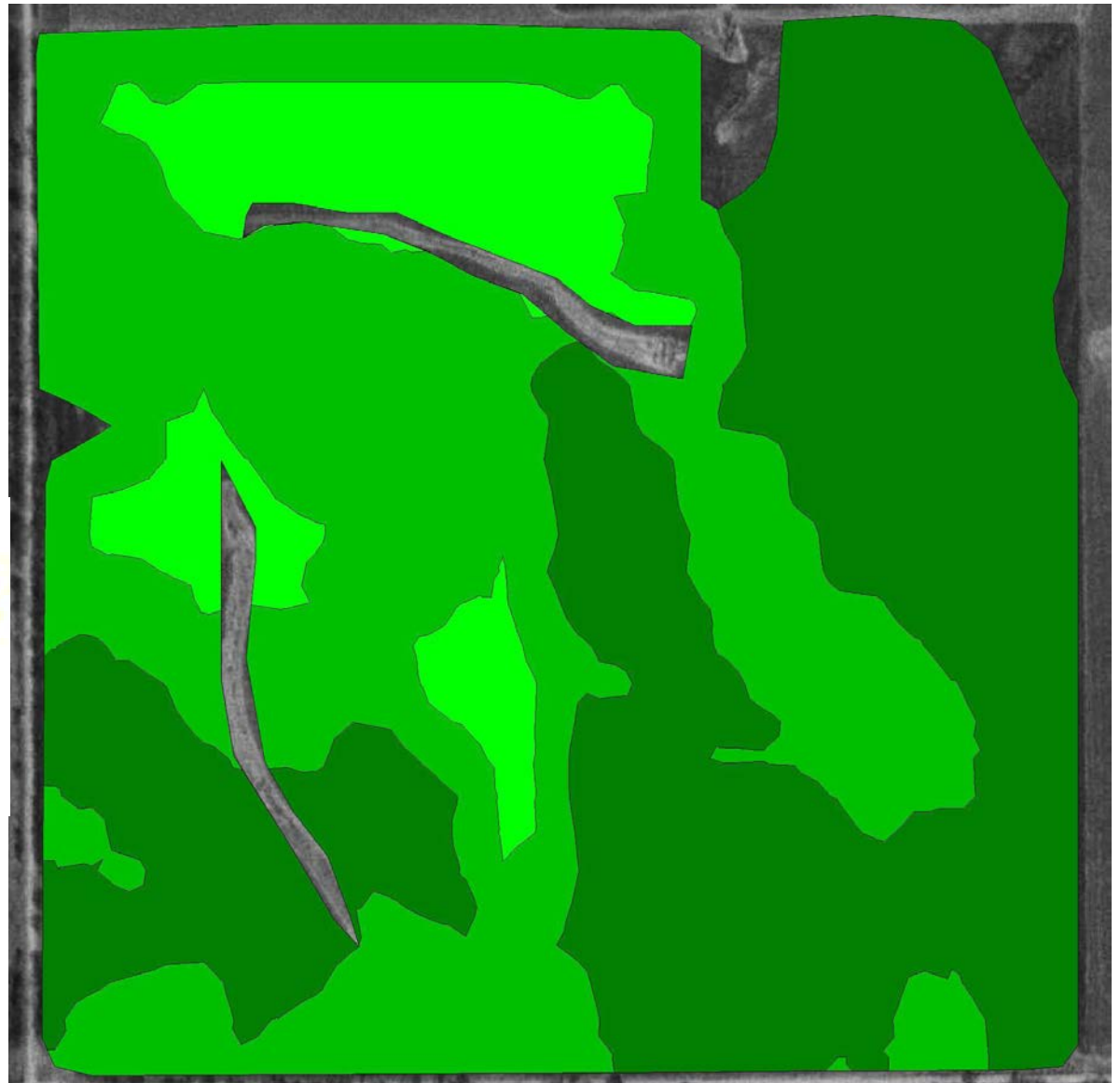
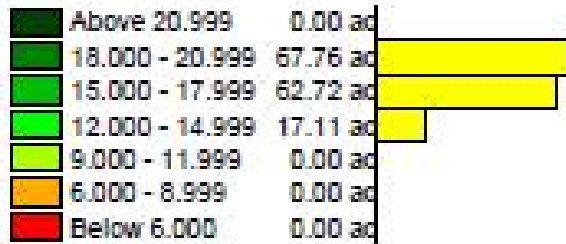
NDVI



SE of Billings, OK

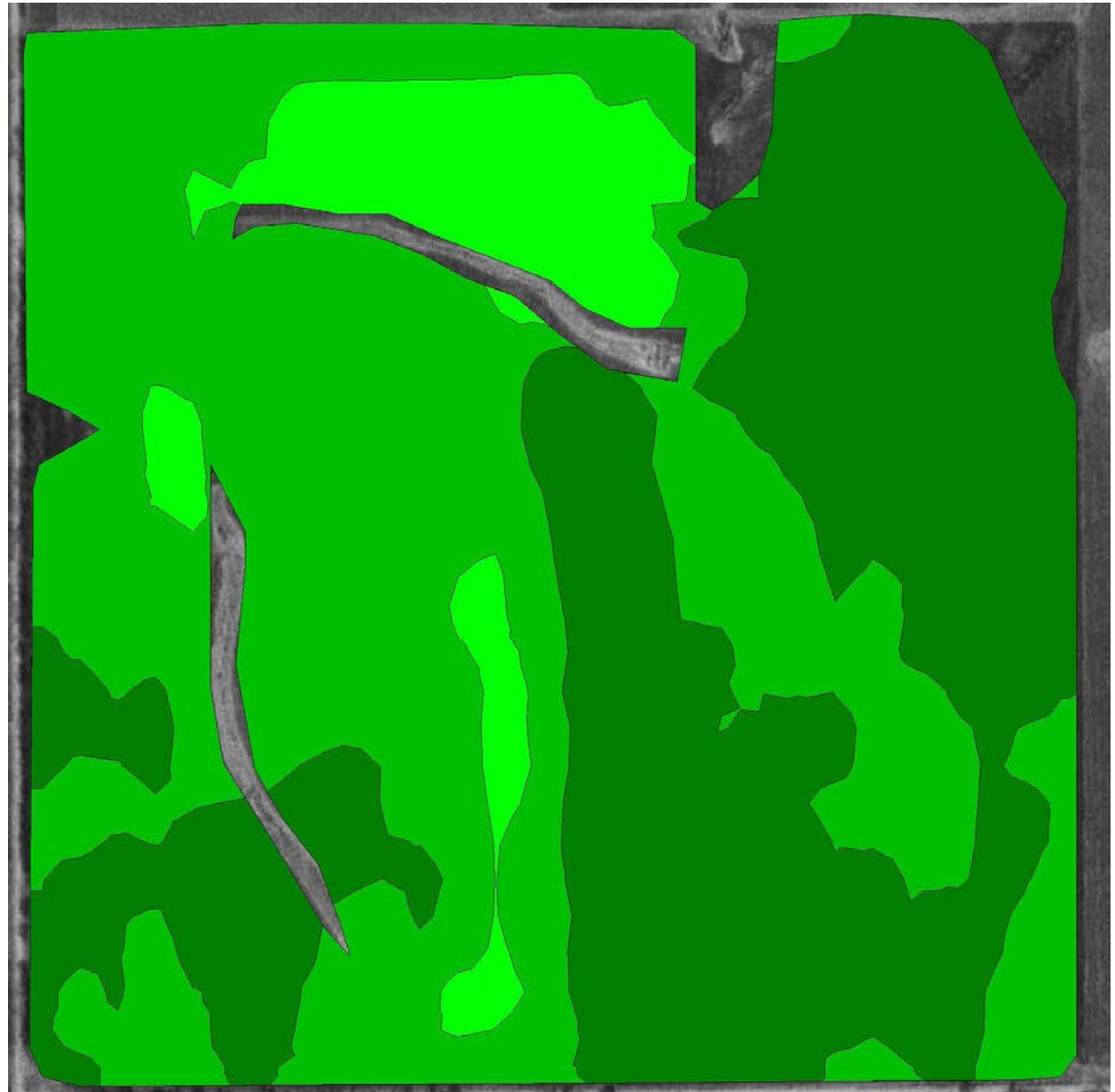
Rx Rate

Gallons/Acre



SE of Billings, OK

Applied Rate



Gallons/Acre

Above 20.999	0.00 ac	
18.000 - 20.999	62.78 ac	
15.000 - 17.999	71.01 ac	
12.000 - 14.999	13.80 ac	
9.000 - 11.999	0.00 ac	
6.000 - 8.999	0.00 ac	
Below 6.000	0.00 ac	

Thank you!!!



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