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## **Twin N test plot**

**Test year:** 2014

**Grower:** Cloud 9 Farming, Fred Olberding

**Crop:** Ranger Potato, a processing type of Russet

**Location:** Franklin County, 4 miles north of Pasco, Washington

**Field ID:** Petty full, used as a check, and Petty half was treated with two applications of Twin N

**Data collected by:**

**Dennis Reisch, Reisch Company, Inc. Pasco, WA 509-366-9353**

### **Introduction**

The two fields identified as Petty Full, (check), and Petty half, (treated). They were side by side and had similar soil type and irrigation systems. The only difference between the fields is that the Petty half had never had potatoes grown on it. This is a slight problem because virgin ground can sometimes produce a larger yield. After emergence the two fields were sampled, both petiole and soil, on a weekly bases. That information was used to make weekly recommendations and water run applications of fertilizer. This approach is referred to as spoon feeding and is normal in this potato production area.

Customer Field ID:	Cloud "g" Farming Petty Full-156	Laboratory: Total Acres:	US Ag	Nitrate N- ppm	Phosphorus, ppm	Potassium, ppm	Calcium, meq/100gm	Magnesium, meq/100gm	Variety Norks Ranger Burbank Shepody	Yield Sacks Tons	Yield Sacks Tons	Boron, ppm
Soil Analysis Results:	Soil pH	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Salts, mmhos/cm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	CEC meq/100gm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Excess Lime %	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Organic N, lbs/ A	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	O.M. %	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	US Ag	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Nitrate N- ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Phosphorus, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Potassium, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Calcium, meq/100gm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Magnesium, meq/100gm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Yield Sacks	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Yield Tons	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Iron, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Zinc, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Sulfur, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Manganese, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Copper, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
	Boron, ppm	Na ppm=	0.3	10.07	0.3	7.6	0.45	0.3	7.6	0.45	0.3	0.4
<b>Organic Acids Recommendations:</b>												
Preplant Humitron 50G,	[OR]											
Top Dress Humitron 50G												
Connector with Liquid Starter Fertilizer	[and/or]											
First Irrigation												
Connector Water run												
Connector with Follar Applications												
<b>Secondary and Micro Nutrient Balancing Recommendations</b>												
Calcium =	Lime =	0 Gyp=	0	Elemental Sulfur=	0	pounds/acre						
Magnesium	K-Mag	0 MgSO4	0	pounds/acre								
Zinc	0	Note:										
Iron	0											
Manganese	12											
Copper	3											
Boron	2											
<b>Primary Nutrient and Sulfate Sulfur Recommendations</b>												
N	P2O5	K2O	S	SO4								
225	182	375.2	63.6									
N	P2O5	K2O	S	Ca	Mg	Zn	Mn	Fe	Cu	B	Humitron Connector	
Preplant	0	82	251	30	0	0	6	0	3	2	0	0
Starter	36	100	0	15	0	1	0.5	0	0	0	0	5
Waterrun	189	0	124	19	0	0	0	0	0	0	0	5
Follar	0	4	8	0	0	0.0	0.6	0.0	0.3	0.18	0	2.5

"Although care has been taken in developing this recommendation program  
Dennis Reisch, Reisch Company, Inc. does not and cannot guarantee the  
accuracy thereof because of the information entered generated by the Soils  
Lab and/or the method in which the sample was gathered. Anyone using  
the information does so at their own risk and shall be deemed to indemnify  
Dennis Reisch, Reisch Company, Inc., from any crop injury or damage arising  
from such use."

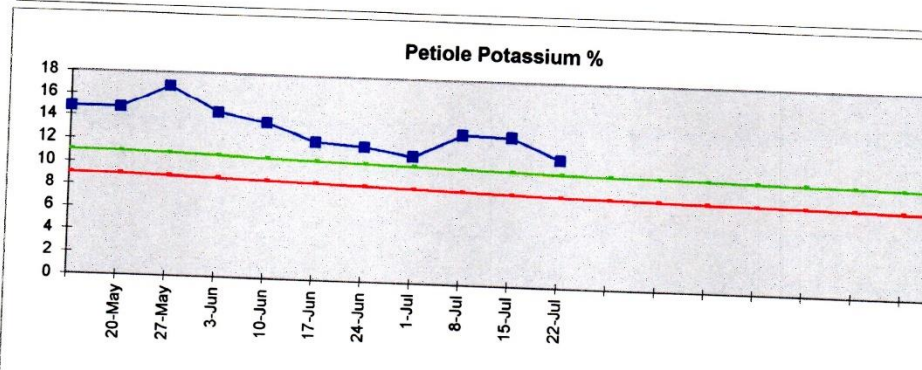
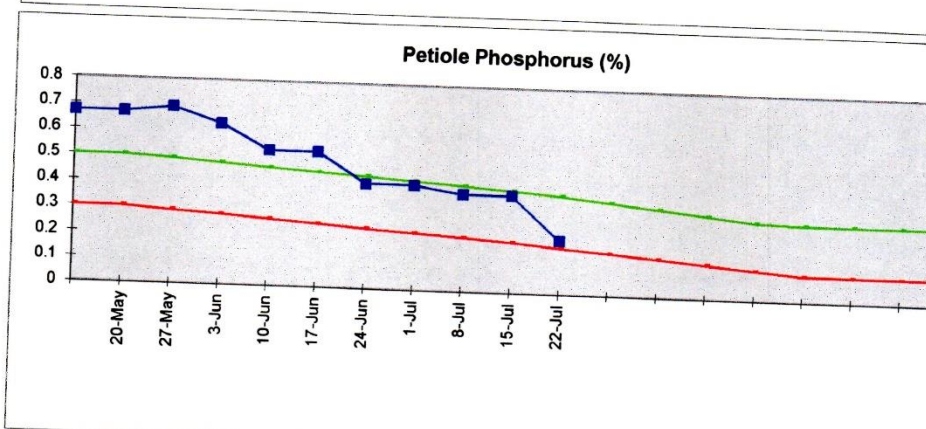
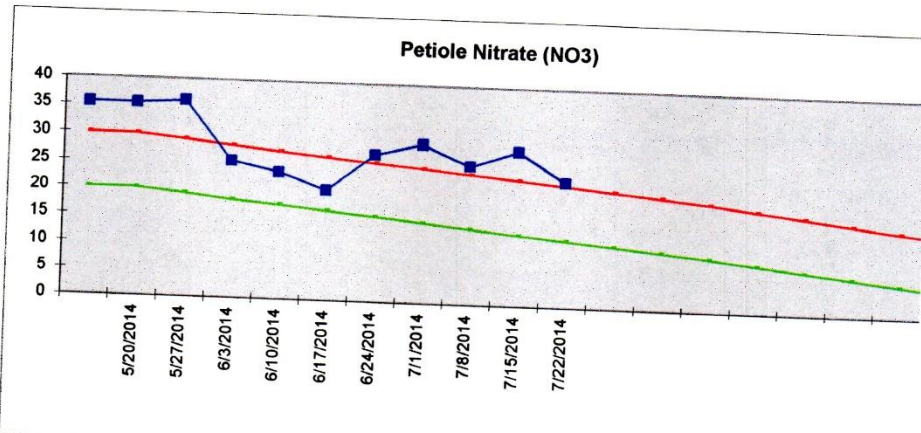
Customer Field ID	Cloud "3" Farming Petty Half	Laboratory: Total Acres	US Ag	Variety Norris Ranger Burbank Shepody	Yield Sacks Tons	Yield Sacks Tons	Yield Sacks Tons										
Soil Analysis Results:	Soil pH	Na meq/100gm 0.2	CEC meq/100gm 7.68	Excess Lime % 0	Organic N, lbs/ A 0.5	Nitrate N- ppm 12	Phosphorus, ppm 10	Potassium, ppm 216	Calcium, meq/100gm 5.24	Magnesium, meq/100gm 1.68	Sulfur, ppm =lb/ ppm 3	Zinc, ppm 1.3	Iron, ppm 7	Manganese, ppm 1	Copper, ppm 0.5	Boron, ppm 0.3	
<b>Organic Acids Recommendations:</b>																	
Preplant Humitron 50G	[OR]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Top Dress Humitron 50G	[and/or]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connector with Liquid Starter Fertilizer		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
First Irrigation		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connector Water run		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Connector with Follar Applications																	
<b>Secondary and Micro Nutrient Balancing Recommendations</b>																	
Calcium =	Lime =	0 Gyp=	0	Elemental Sulfur=	0	0	0	0	0	0	0	0	0	0	0	0	0
Magnesium	K-Mag	0	MgSO4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zinc	5	Note:															
Iron	12																
Manganese	16																
Copper	3																
Boron	2																
<b>Primary Nutrient and Sulfate Sulfur Recommendations</b>																	
N	P2O5	K2O	S...SO4														
276	280	219.8	81														
N	P2O5	K2O	S	Ca	Mg	Zn	Mn	Fe	Cu	B	Humitron Connector						
Preplant	11	180	147	43	0	0	5	8	6	3	2	0	0	0	0	0	0
Starter	36	100	0	16	0	1	0.5	0	0	0	0	0	0	0	0	0	0
Waterrun	228	0	73	23	0	0	0	0	0	0	0	0	0	0	0	0	0
Follar	0	6	4	0	0	0	0.5	0.8	0.6	0.3	0.21	0	2.5	0	0	0	0

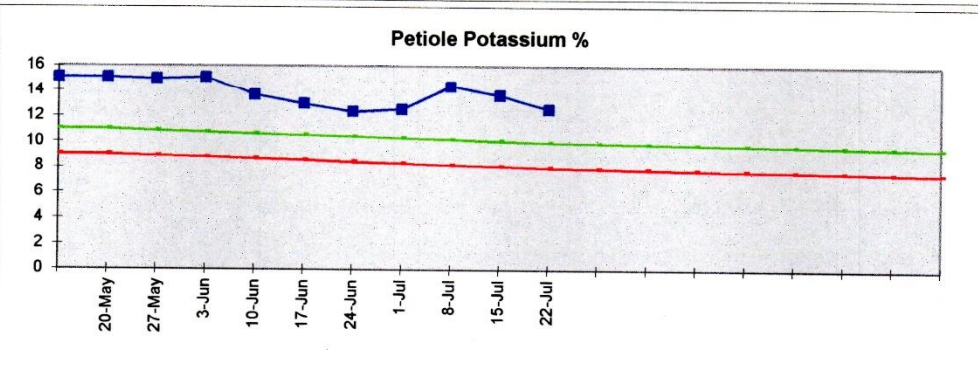
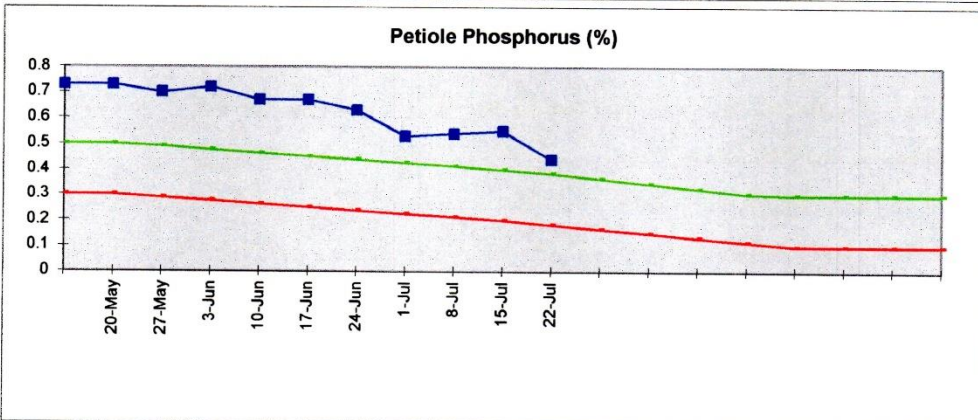
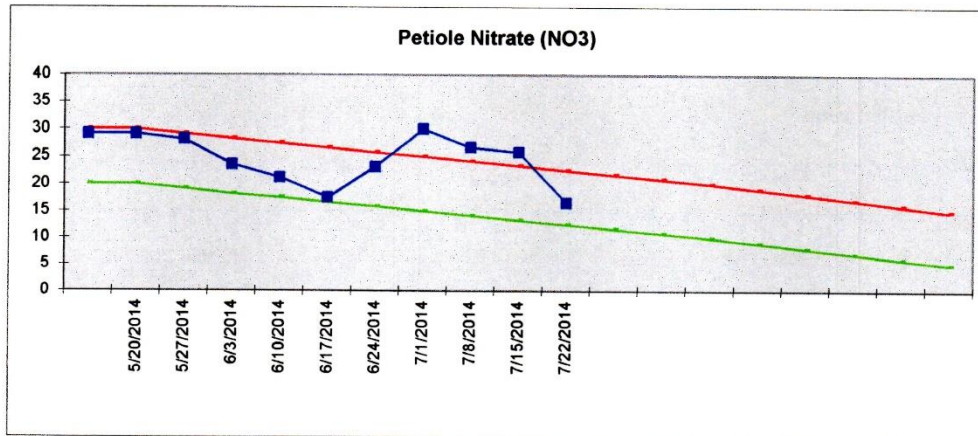
Applications of water run fertilizer started May 9, 2014 and continued through July 16, 2014. Following are dates and amounts delivered plus the dates of the Twin N applications. The amount listed below were delivered on the corresponding dates, and were applied during the next seven day period. It was not necessarily applied on the date of delivery. The Twin N was applied on the date listed.

<b>Date</b>	<b>Petty Half</b>	<b>Petty Full</b>
May 9	17.3 lbs/acre of N	20.7 lbs/acre of N
May 22	40.3 lbs/acre of N	60.9 lbs/acre of N
May 22	Twin N	
June 3		23.4 lbs/acre of N
June 6	Twin N	
June 10	28.9 lbs/acre of N	33.0 lbs/acre of N
June 18	36.0 lbs/acre of N	15.3 lbs/acre of N
June 25	5.6 lbs/acre of N	24.7 lbs/acre of N
July 2	24.3 lbs/acre of N	25.2 lbs/acre of N
July 9		26.8 lbs/acre of N
July 16	<u>12.11 lbs/acre of N</u>	<u>16.3 lbs/acre of N</u>
<b>TOTALS</b>	<b>164.51lbs/acre of N</b>	<b>246.3lbs/acre of N</b>

**The Petty Half, (Treated), used 81.79 pounds/acre less Nitrogen than the Petty Full, (Check)**

# Petty Full







07/01/14  
REISCH  
FULL & HALF

PETTY  
↓  
FULL





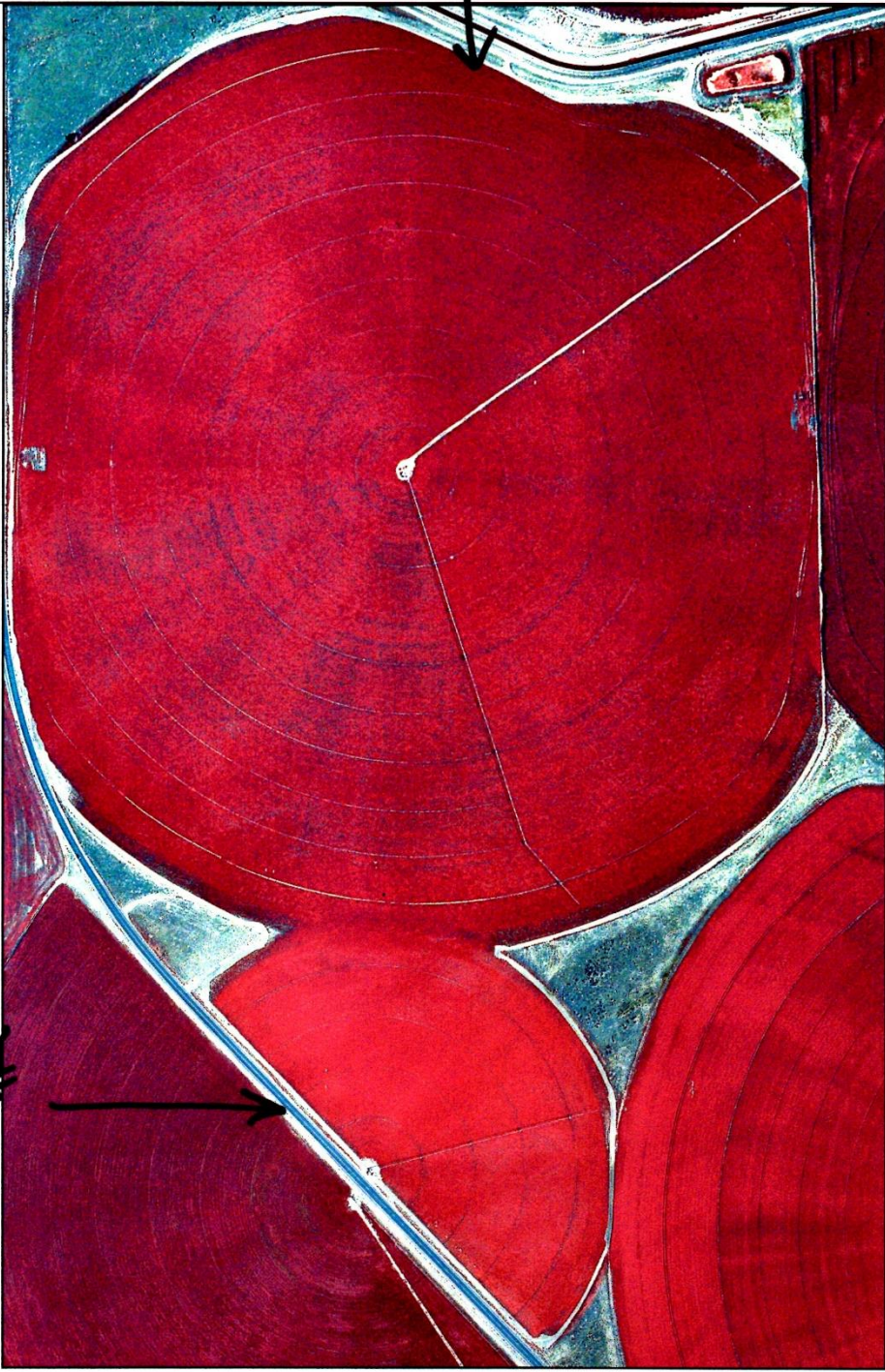


08/06/14  
Reisch  
HALF 1

PETTY FULL



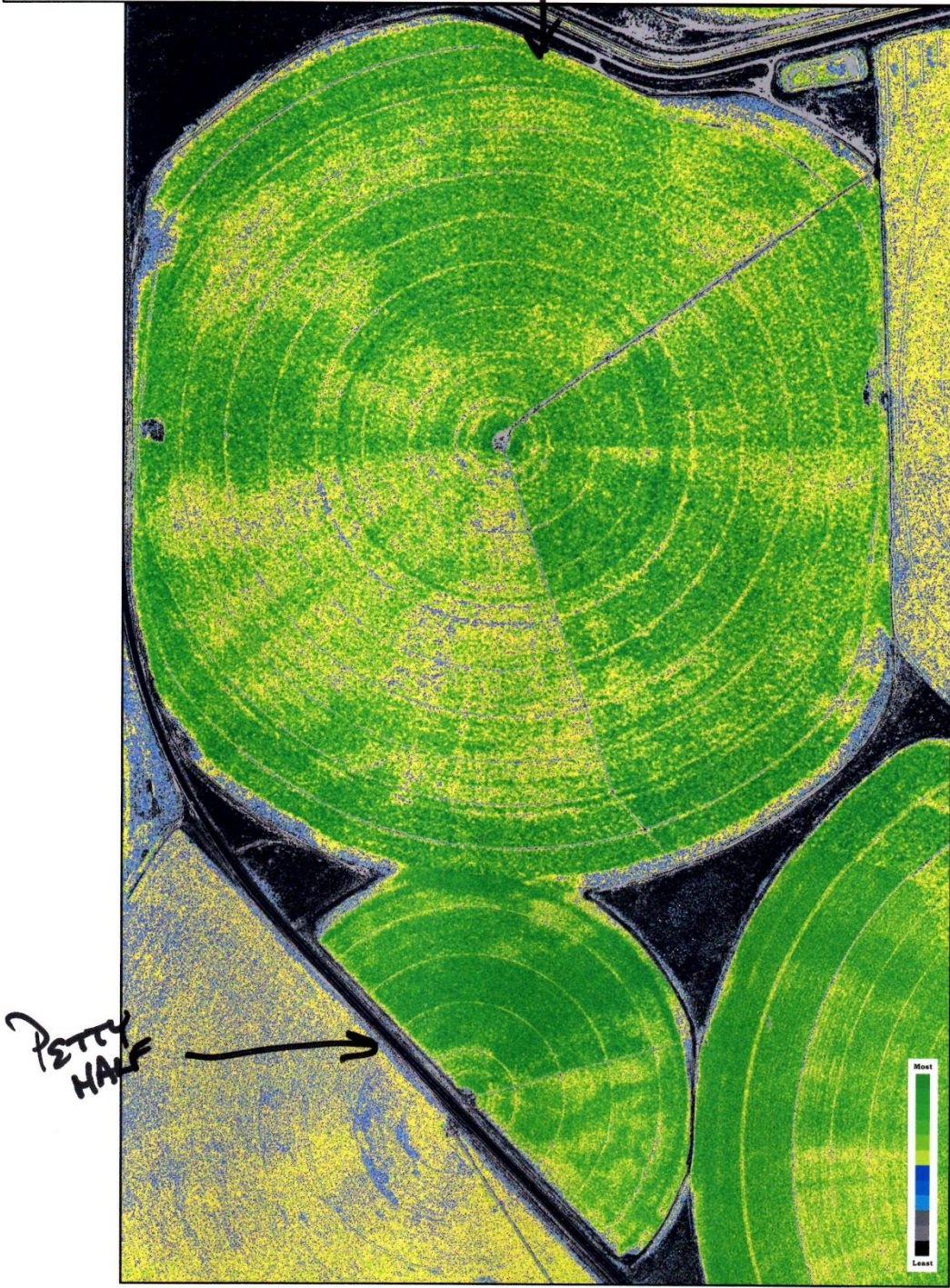
PETTY  
HALF





08/06/14  
Reisch  
HALF 1

PETTY FULL

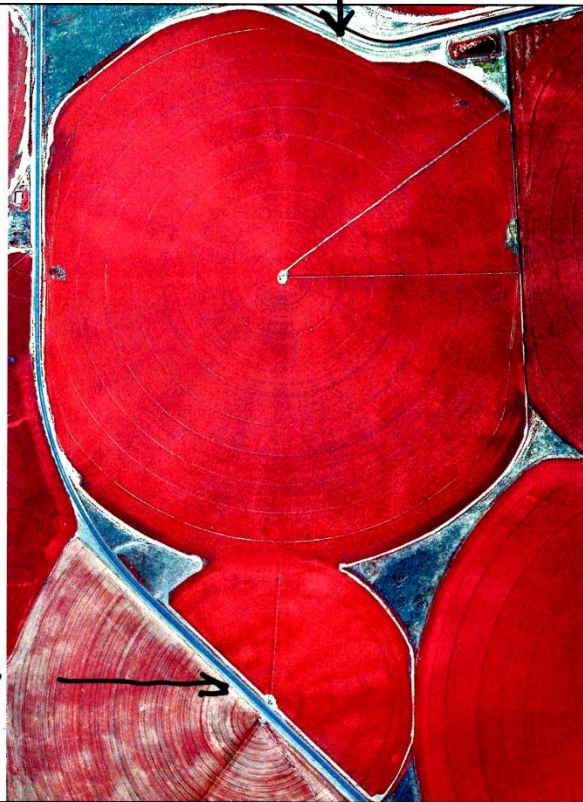




8/21/14  
HALF & FULL

Petty Full

Petty Half

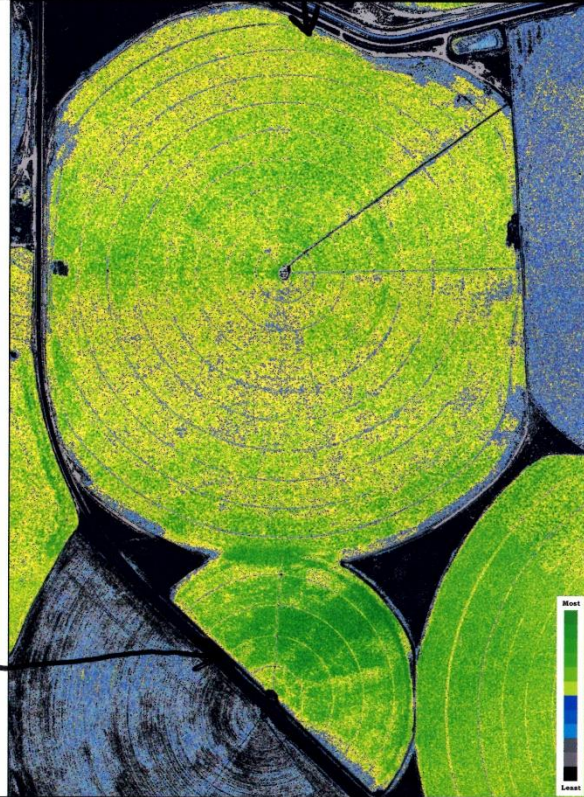




8/21/14  
HALF & FULL

PETTY FULL

PETTY HALF



## Yield data

The harvest started around September 1, 2014. The two fields were harvested together rather than separately. Yield data was obtained by measuring the distance traveled to fill the trucks. This was done randomly throughout both fields. The total tons delivered to the processor was 7283.7589 tons and yields were calculated by using the measurements retrieved during the harvest. The yields are shown below:

**Petty Full (check) yield was 40.7346 tons or 814.692 sacks per acre**

**Petty Half (treated) yield was 42.2346 tons or 844.692 sacks per acre.**

The difference is a 3.55% increase.

## Summary

**When we calculate the total amount of fertilizer, preplant, starter, and water run, 16.75% less Nitrogen was used. On top of that we increased yields by 3.55%. Some of this could be explained by the fact that the Petty Half field had never had a crop of potatoes before, but I feel the Twin N applications saved at least 50 pounds of Nitrogen per acre.**

I will be recommending **Twin N** to my customers for the 2015 potato crop.