

# ASSESSING LAND PRODUCTIVITY: A GROWER'S PERSPECTIVE

PRESENTED BY:

**IAN OLSON**

REGULATORY SPECIALIST

CENTROL CROP CONSULTING

# OUTLINE

- INTRODUCTION
- WHAT IS THE GOAL OF THE FARMER?
- WHAT DOES IT COST TO OPERATE AN ACRE OF LAND?
- AGRONOMY 101
- NEW TOOLS TO DETERMINE FERTILITY AND PRODUCTIVITY
- HOW CAN THESE TOOLS HELP MAXIMIZE CROP PRODUCTIVITY?
- CAN WE USE THESE NEW TOOLS TO TARGET FARM BILL CONSERVATION ACRES?

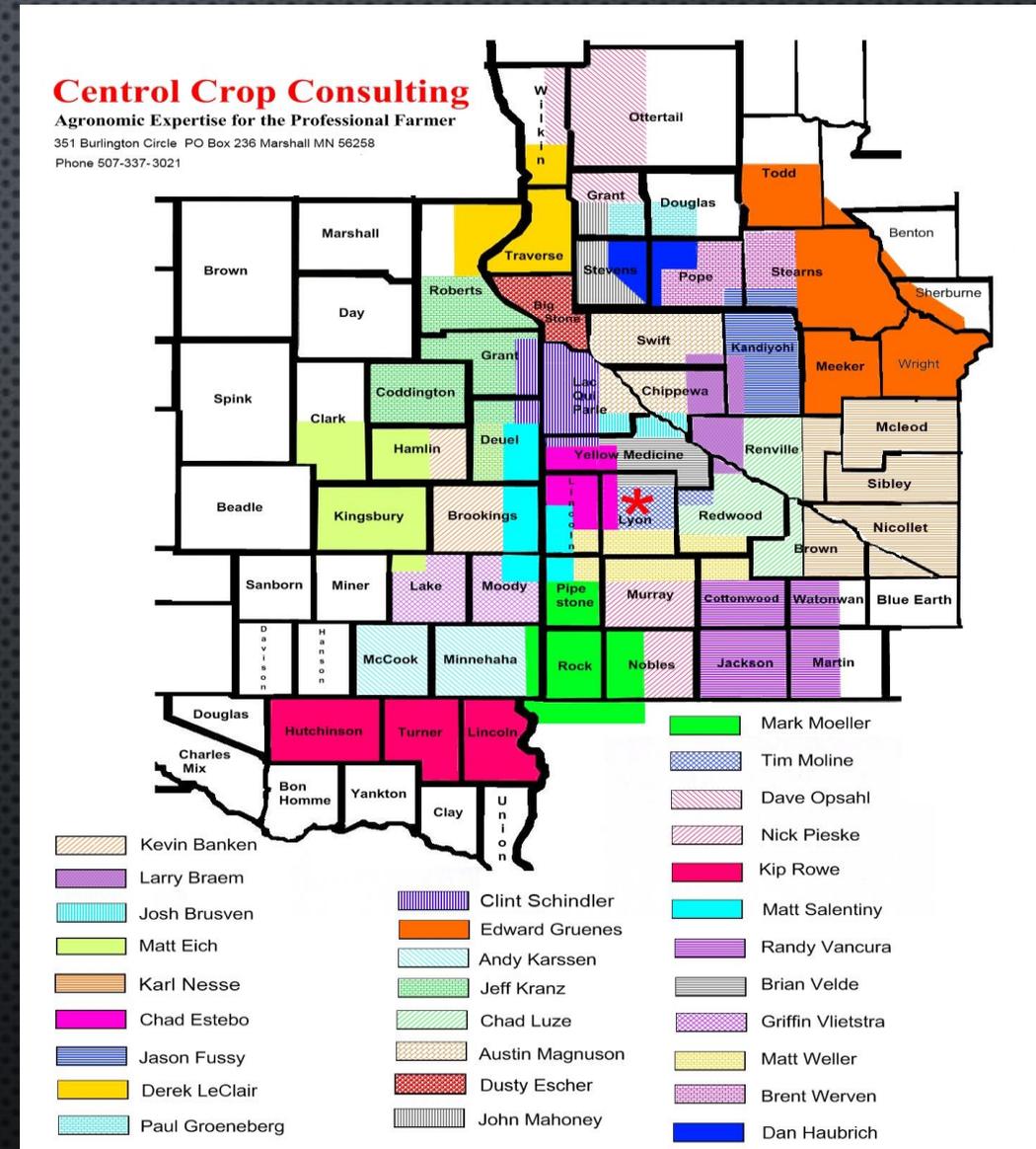
# INTRODUCTION

## • WHO IS CENTROL

- AN INDEPENDENT CROP CONSULTING COOPERATIVE
- PROVIDE **UNBIASED** AGRONOMIC RECOMMENDATIONS DIRECTLY TO THE FARMER TO MAXIMIZE PROFITABILITY ACROSS THE FARM
- 37 CONSULTANTS
- FULL SERVICE PRECISION AG DEPARTMENT
- GOVERNMENT AND REGULATORY SERVICES

## • WHO I AM

- REGULATORY SPECIALIST FOR CENTROL CROP CONSULTING
  - SPECIALIZE IN GOVERNMENT PROGRAMS
  - WORK WITH FARMERS REGARDING OPPORTUNITIES AND REQUIREMENTS FOR MOST LOCAL, STATE AND FEDERAL PROGRAMS INCLUDING: NRCS, BWSR, MPCA, MDA, AND SWCD
  - CENTROL'S COORDINATOR FOR GOVERNMENT PROGRAM SERVICES
- PREVIOUSLY WAS A FARM TECHNICIAN FOR TRAVERSE AND YELLOW MEDICINE SWCDs



# DETERMINING PRODUCTIVITY: WHAT IS THE ULTIMATE GOAL OF ANY FARMING OPERATION

- TO MAXIMIZE PROFITABILITY ACROSS ALL ACRES OF THE OPERATION
- HOW IS THIS ACHIEVED:
  - MAXIMIZING ROI
  - MINIMIZING RISK
  - MANAGE INPUTS
  - UNDERSTAND YOUR RESOURCES
  - MARKET APPROPRIATELY

# WHAT DOES IT COST TO OPERATE AN ACRE OF LAND?

<u>Income</u>	2015	
	<u>Corn</u>	<u>Soybeans</u>
AVG Bu/acre	175	45
Current Prices	\$ 3.00	\$ 8.75
Total Income	<b>\$ 525.00</b>	<b>\$ 393.75</b>
<u>Expenses</u>	2015	
Cash Rent/Land payment	225	225
Seed	130	60
Fert.	140	0
Crop Chem	30	30
Crop Ins	20	20
Fuel & Oil	36	23
Drying Fuel	15	0
Repairs /Custom Hire	45	35
Total Machinery	55	50
Hauling and Trucking	8	3
Farm Insurance	7	7
Marketing	5	5
Real Estate Taxes	0	0
Operating Int. (9 months)	23	15
Family Living	50	50
Total direct Ex. Per Acre	794.8	528.8
Net Profit Per Acre	<b>\$ (269.80)</b>	<b>\$ (135.05)</b>
Breakeven Price with AVG Yield	\$ 4.54	\$ 11.75
Breakeven Yield (assuming prices above)	<b>264.93</b>	<b>60.43</b>

# AGRONOMY 101: WHICH INPUTS CAN WE INFLUENCE AS AN AGRONOMIST?

- **FERTILIZER** – CHOOSE THE RIGHT FERTILITY PLAN TO MAXIMIZE YOUR ROI
  - AT A CERTAIN POINT MORE FERTILIZER DOES NOT MEAN MORE BUSHELS IT MEANS MORE \$ SPENT
- **SEED** – IT IS IMPORTANT TO UNDERSTAND THE GROWERS NEEDS AND DETERMINE PROPER SEED SELECTION
- **CHEMICAL** - A SMALL DOLLAR ITEM BUT IT IS IMPORTANT TO MAINTAIN BEST IPM PRACTICES
- VARIABLES THAT INFLUENCE COST/RETURN THAT ARE OUT OF OUR CONTROL:
  - MARKETS
  - WEATHER
  - CROP INSURANCE/GUARANTEES
  - OPERATING COSTS
  - CASH RENT/LAND VALUE
- FARMERS CAN NOW USE NEW TECHNOLOGY AND NEW DATA TO HELP THEM MAKE SMARTER DECISIONS REGARDING INPUTS AND PRODUCTIVITY

# UNDERSTANDING FERTILITY VS PRODUCTIVITY

- **FERTILITY:** NUTRIENTS W/IN THE SOIL
  - THE RELATIVE MEASURE OF AVAILABLE NUTRIENTS OR OTHER CHEMICAL COMPONENTS WITHIN THE SOIL
  - PROVIDES AN INDEX VALUE THAT CAN THEN BE CORRELATED TO FERTILIZER NEEDS
  - USED AS A BASIS FOR PROFITABLE AND ENVIRONMENTALLY RESPONSIBLE FERTILIZER DECISION
  - MUST ASSUME A YIELD GOAL FOR THE FIELD
  - MEASURED WITH A SOIL TEST
- **PRODUCTIVITY:** CROP YIELD POTENTIAL
  - THE SOILS POTENTIAL TO SUSTAIN AND PRODUCE A CROP
  - NOT NECESSARILY CORRELATED TO SOIL FERTILITY
  - MORE LIKELY DEFINED BY SOIL TYPE AND STRUCTURE THAN PLANT AVAILABLE NUTRIENTS
  - MEASURED THROUGH EC DATA, YIELD DATA, OR IMAGERY

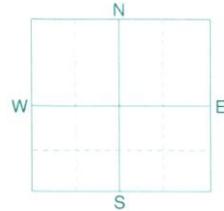
# UNDERSTANDING FERTILITY VS PRODUCTIVITY



Soil Analysis by Agvise Laboratories  
 (http://www.agvise.com)  
 Northwood: (701) 587-6010  
 Benson: (320) 843-4109

## SOIL TEST REPORT

FIELD ID  
 SAMPLE ID  
 FIELD NAME  
 COUNTY  
 TWP  
 SECTION QTR ACRES  
 PREV. CROP Soybeans



SUBMITTED FOR:

SUBMITTED BY:

REF #                      BOX # 0  
 LAB #

Date Sampled 06/28/2012                      Date Received 07/05/2012                      Date Reported 8/4/2013

Nutrient In The Soil	Interpretation	1st Crop Choice		2nd Crop Choice		3rd Crop Choice	
		LB/ACRE	APPLICATION	LB/ACRE	APPLICATION	LB/ACRE	APPLICATION
Nitrate		175	BU	190	BU	25	Tons
Olsen Phosphorus	15 ppm	30	Broadcast	30	Broadcast	0	
Potassium	216 ppm	0		0		0	
Chloride							
Sulfur							
Boron							
Zinc	1.50 ppm	2	Broadcast	2	Broadcast	0	
Iron							
Manganese							
Copper							
Magnesium							
Calcium							
Sodium							
Org.Matter	4.9 %						
Carbonate(CCE)							
0-6" Sol. Salts	1.9 mmho/cm	7.8					

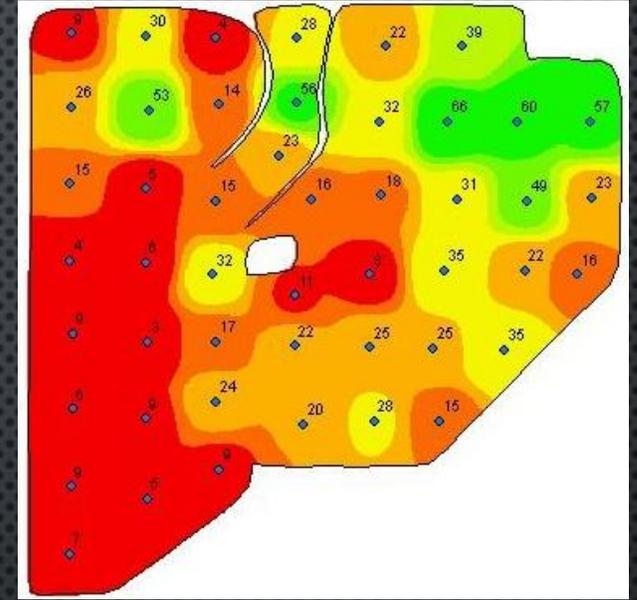
Crop 1: Soil Nitrogen level is estimated at 25 lbs/acre. Nitrogen is credited 30 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. The Nitrogen Guidelines are based on crop use only as no nitrogen test was requested. Many crops may respond to a starter application of P & K even on high soil tests. High salt levels may decrease yields in portions of this field. Extra nitrogen is suggested. Crop Removal: P205 = 79 K2O = 47  
 Crop 2: Soil Nitrogen level is estimated at 25 lbs/acre. Nitrogen is credited 30 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. The Nitrogen Guidelines are based on crop use only as no nitrogen test was requested. Many crops may respond to a starter application of P & K even on high soil tests. High salt levels may decrease yields in portions of this field. Extra nitrogen is suggested. Crop Removal: P205 = 76 K2O = 51  
 Crop 3: Soil Nitrogen level is estimated at 25 lbs/acre. Nitrogen is credited 20.1 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. The Nitrogen Guidelines are based on crop use only as no nitrogen test was requested. Many crops may respond to a starter application of P & K even on high soil tests. High salt levels may decrease yields in portions of this field. Extra nitrogen is suggested. \*\*\* A 24-inch Soil Test is required for this nutrient. Crop Removal: P205 = 44 K2O = 75



# NEW TECHNOLOGY TO HELP DETERMINE FERTILITY AND PRODUCTIVITY

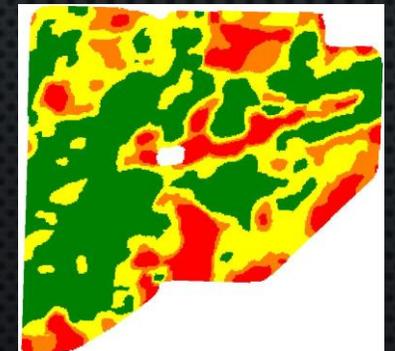
- **FERTILITY:**

- PRECISION SOIL SAMPLING: GRIDS OR ZONES
  - HIGH DEFINITION SOIL SAMPLING
  - COLLECT LARGE AMOUNTS OF FERTILITY DATA WITHIN EACH FIELD
  - MORE INFO THE MORE ACCURATE THE FERTILIZER RECOMMENDATION
  - ABLE TO MAKE MULTIPLE FERTILIZER RATE RECOMMENDATIONS W/IN EACH FIELD - VRT



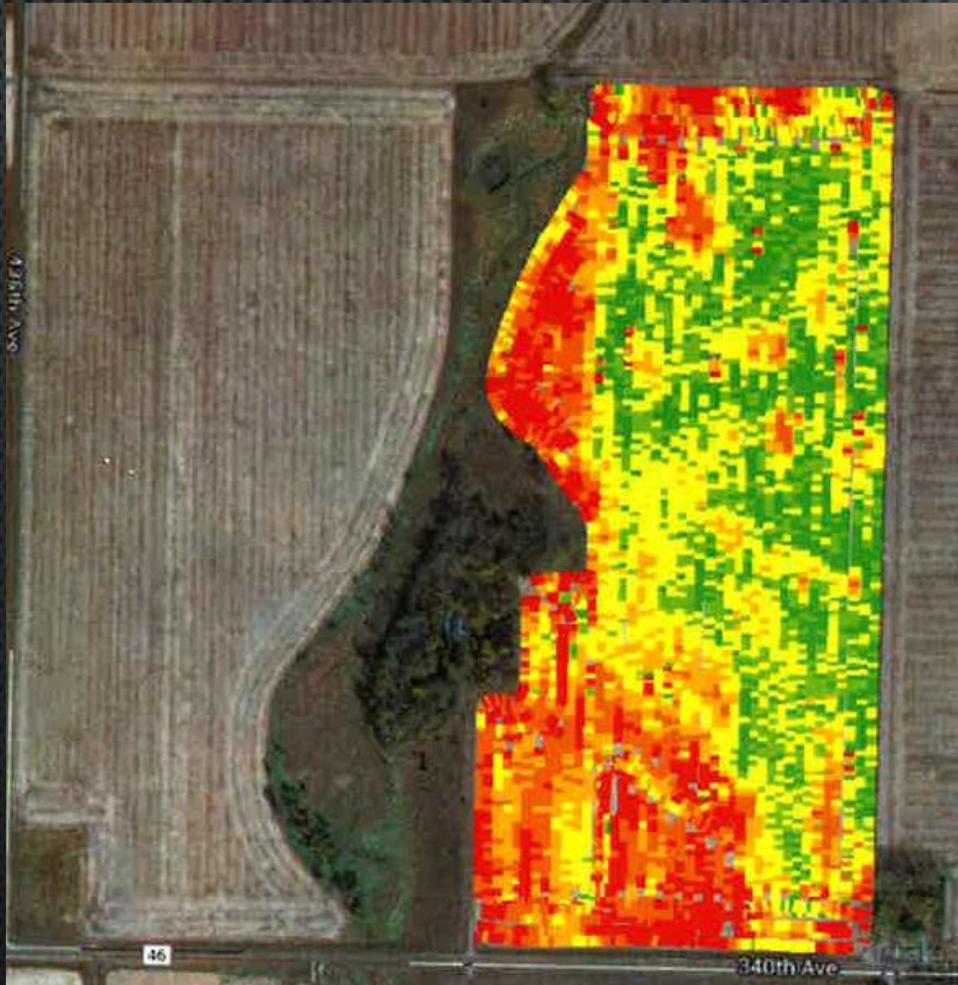
- **PRODUCTIVITY:**

- PRODUCTIVITY ZONES:
  - MEASURES PRODUCTIVITY VARIABILITY THROUGHOUT THE FIELD
  - EC DATA, YIELD DATA, SATELLITE IMAGERY
  - ALLOWS US TO DETERMINE YIELD GOALS OR VARIABLE YIELD GOALS WITHIN A FIELD



THE GOAL OF PRECISION TECHNOLOGY IS TO PLACE INPUTS IN THE RIGHT PLACE AT THE RIGHT RATE TO MAXIMIZE YIELD ON HIGHLY PRODUCTIVE GROUND AND TO MINIMIZE LOSE ON LESS PRODUCTIVE GROUND

# NEW TECHNOLOGY CAN ALSO HELP US PICK OUT LESS PRODUCTIVE AREAS



Yield data is the equivalent of a report card

Allows us to pick out reoccurring trends in productivity

Can pick out areas that are low producing that may make sense for a CRP type program

Have to understand WHY the yield is low

# WHAT DOES THIS NEW TECHNOLOGY MEAN FOR CRP TYPE CONSERVATION PROGRAMS

- PRECISION AG IS STILL A VERY EFFECTIVE CONSERVATION PRACTICE
  - FOLLOWS THE 4R APPROACH TO FERTILIZER MANAGEMENT – RATE, SOURCE, TIME, PLACE
  - A UNIQUE WIN-WIN FOR THE FARMER AND FOR THE ENVIRONMENT
- AREAS THAT ARE NOT AS PRODUCTIVE ARE EASIER TO IDENTIFY AND TARGET
- USING THE SAME DATA MAY BE A VERY EFFECTIVE WAY TO TARGET AND TREAT AREAS WITH CRP
- CONSERVATION SPECIALIST SHOULD HAVE A BASIC UNDERSTANDING OF HOW THEY CAN USE INFORMATION IN THEIR FAVOR

# HOW TO APPROACH ALL OF THIS INFORMATION WHEN PROPOSING NEW PROGRAM ACRES

- KNOW YOUR TARGET AREA – 35,000' VIEW
  - TMDL WATERSHED
  - GRANT AREA
- UTILIZE THE RESOURCES AT YOUR DISPOSAL FIRST – DESK DIAGNOSIS
  - AREAL IMAGERY
  - TOPO MAPS/TERRAIN ANALYSIS TOOLS
  - SOIL TYPE MAPS
  - LOCAL KNOWLEDGE
  - **DON'T LET IT STOP HERE!**
- GET INTO THE FIELD
  - FIND A TIME TO MEET WITH THE FARMER – IF HE IS ASKING YOU TO ADDRESS HIS CONCERN MEET AT HIS PLACE
  - GROUND-TRUTHING IS STILL THE BEST TOOL IN THE TOOLBOX

# HOW TO APPROACH ALL OF THIS INFORMATION WHEN PROPOSING NEW PROGRAM ACRES

- TRY TO LEARN AS MUCH ABOUT THE FARMERS OPERATION AS YOU CAN WITHOUT PRYING FOR INFORMATION
  - ASK ABOUT ANY NEW TECHNOLOGY THEY ARE USING ON THEIR OPERATION
  - ASK IF THEY MAY BE WILLING TO SHARE SOME OF THAT INFO TO ASSIST WITH THEIR CRP PROJECT
- MAKE IT AN ECONOMICAL DECISION AS WELL AS AN ENVIRONMENTAL DECISION:
  - TRY TO UNDERSTAND WHAT THE COSTS OF FARMING ARE AND HOW THE BENEFITS OF A CRP PAYMENT MAY BE THE MOST ECONOMICAL DECISION FOR SOME ACRES
  - NOW MAY BE A VERY GOOD TIME TO CAPTURE LAND FOR CRP- PERFECT STORM
- KEEP IN MIND THAT THERE ARE ALWAYS GOING TO BE FACTORS THAT YOU DON'T AND SHOULDN'T UNDERSTAND WHEN IT COMES TO EACH SPECIFIC FARMING OPERATION

# ALWAYS REMEMBER:

- CONSERVATION PRACTICES ARE A VERY IMPORTANT PART OF OUR LANDSCAPE AND SHOULD CONTINUE TO BE IMPLEMENTED ON **HIGHLY SENSITIVE ACRES**.
- THE PRODUCER'S GOAL IS TO **MAXIMIZE PROFIT ACROSS EVERY** ACRE OF LAND.
- AGRICULTURAL BMPs AND NEW TECHNOLOGIES HAVE ALLOWED FARMERS TO INCREASE PRODUCTIVITY AND MAXIMIZE PROFITABILITY OVER A HIGH PERCENTAGE OF ACRES WHILE MAINTAINING A HIGH LEVEL OF LAND STEWARDSHIP.
- THERE ARE STILL **TARGETED ACRES** ON WHICH THE MOST PROFITABLE OPTION FOR A PARTICULAR ACRE MAY BE A GOVERNMENT PROGRAM THAT PROMOTES WATER QUALITY AND WILDLIFE HABITAT.
- TARGETING THESE ACRES SHOULD BE A **COLLABORATION** BETWEEN THE FARMER, GOVERNMENT AGENCY PERSONNEL, AND AGRONOMISTS
- **HAS TO BENEFIT THE FARMER AND THE LAND**

# QUESTIONS?

- IAN OLSON

REGULATORY SPECIALIST

CENTROL CROP CONSULTING

320-226-3894

IOLSON@CENTROL.COM