CROP PRODUCTION SERVICES, INC.

Implementation of Sustainable Agricultural Initiatives

TFI and FIRT – Fertilizer Outlook and Technology Conference

Presenter: Bill Grillo

November 2010

Crop Production Services

TOPICS

- *Crop Production Services, Inc.* – a brief overview
- *Seed Technology*…contribution to Sustainable Agriculture
- *Soil/Tissue sampling*…important to Sustainable Agriculture
- *Precision Placement of "P"*… growing use of "Pop-Ups"
- *Nutrient Efficient Fertilizers* … growing importance

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PART 1:

Overview of CPS…

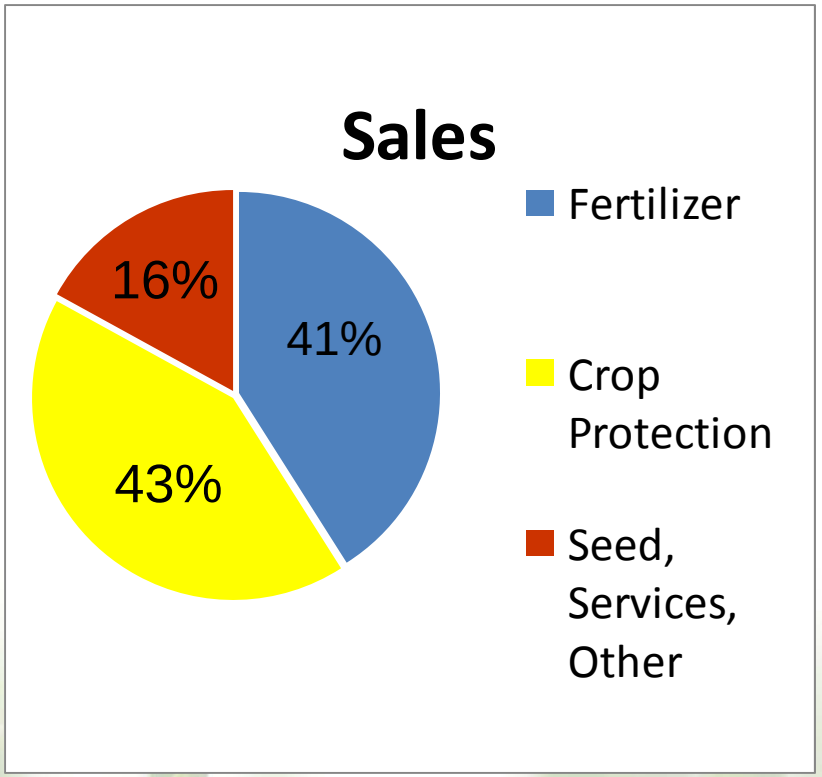
Crop Production Services

- US, Canada, South America

- Approx 900 Branches/Terminals

- Approx 9,000 Employees

- Sales:
  - Revenue: $6.1 billion
  - Fertilizer Tons: 6 million



Source – 2009 Agrium Annual Report

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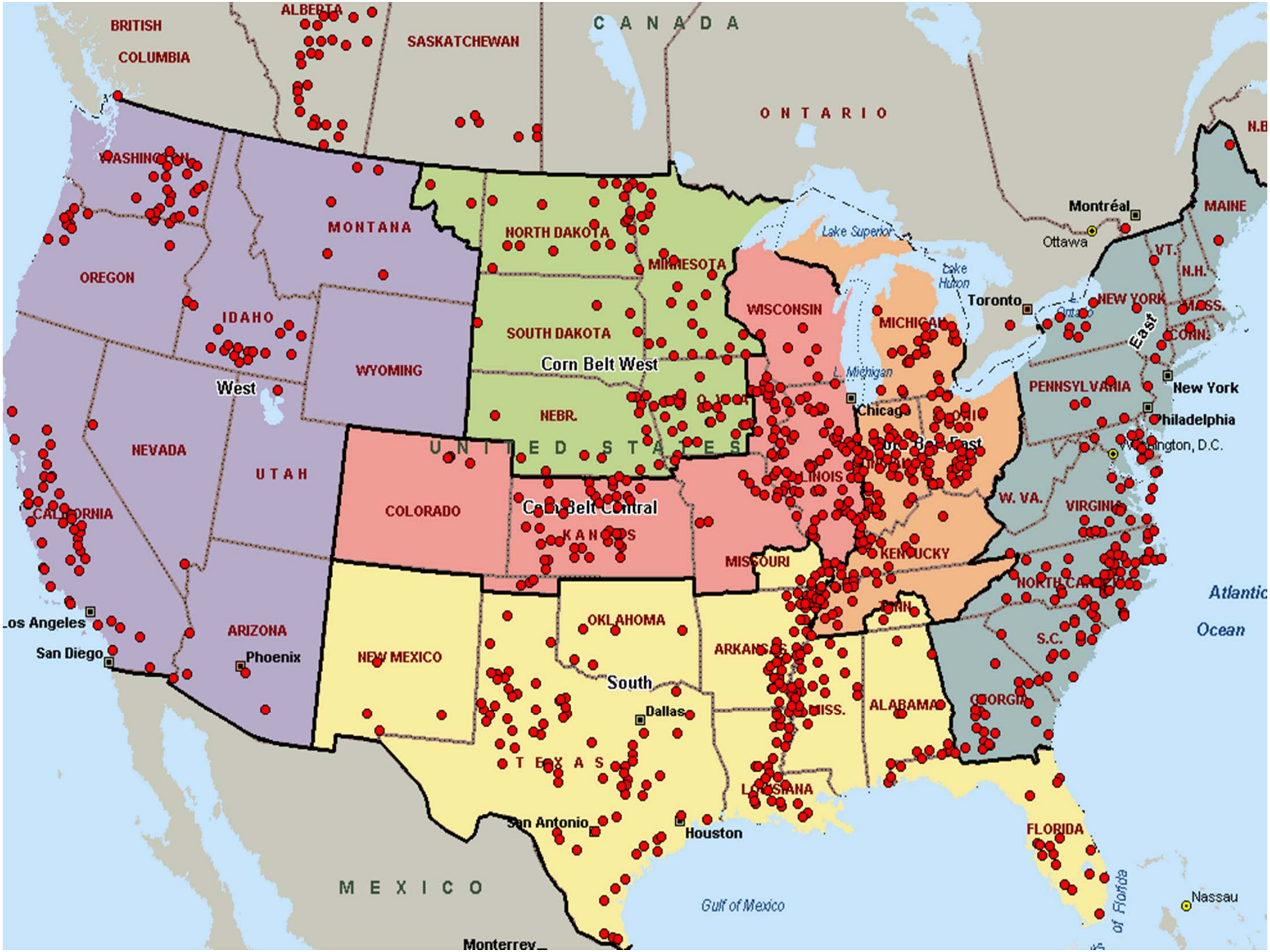
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
CANADA
ONTARIO
WASHINGTON
OREGON
MONTANA
IDAHO
WYOMING
NORTH DAKOTA
MINNESOTA
SOUTH DAKOTA
NEBR.
Corn Belt West
West
NEVADA
UTAH
COLORADO
Corn Belt Central
KANSAS
UNITED STATES
CALIFORNIA
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FLORIDA
Atlantic Ocean
Nassau

PART 2:

Seed…

Contributing to Sustainable Agriculture

Sustainable Agriculture and Seed Technology

Benefits of Herbicide Traits

- *Existing Seed Herbicide Traits*
  - RR/Glyphosate Resistance
  - Liberty Resistance
- *"Sustainable Agriculture": Benefits of Herbicide Traits…*
  - **Majority** of CPS Corn/Soybean Seed…*is "Traited"*
  - **Better** weed control
  - **Less** active ingredient used per acre
  - **Wider** windows for application with improved crop safety

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Insect Traits
Bt Technology – Corn Seed

- *Insect Traits that contain Bt Technology:*
  - Controls many insects: Earworm, cutworm, borer, rootworm, etc…
  - *Majority* of CPS Corn Seeds have a BT technology.

- *"Sustainable Agriculture": Benefits of Bt Technology*
  - Carries season long insect control.
  - Eliminates potential "rescue" treatments.
  - Trait = 100% control… Soil applied = 60-90% control.
  - In most cases trait is cheaper per acre than soil applied controls.

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Seed “Applied” Insecticides

- *Treated Seed: “Applied” Insecticides*

  - The last 7 years has seen an explosion of low usage seed applied insecticides on Corn seed.
  - Seed Applied Insecticides+Bt Traits has significantly reduced soil applied insecticides on corn.
  - By not spraying wide spectrum insecticides, beneficial insects are spared.
  - Less worker exposure as a result of less soil applied insecticides.

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Corn Seed Traits…*Coming Next*

- ***Drought protected corn***…protect 10-25% of yield during weather stress…next 5yrs.
- ***Nitrogen Efficiency Gene***…will have in less than 10yrs…
  - Improve Corn's nitrogen usage efficiency… doesn't necessarily mean less N volumes… but rather Higher Yield Potential.

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Seed & Sustainable Agriculture…

- *Seed technologies that…*
  - **Lower the amount of pesticides used per acre.**
  - **Improve the quality of life for the grower/retailer…**
    - Season long control requiring less time scouting
    - Reduce use of soil applied herbicides and insecticides
    - Less worker exposure
    - Less off target applications on beneficial insects
  - **Next 5-10yrs**…Corn Seed…
    - Drought Protection & Nitrogen Efficiency

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PART 3:

Soil and Tissue Sampling…

Contribution to Sustainable Agriculture

NutriScription®

The Process

Tissue &

Soil sampling

NutriScription CERTIFIED Laboratory

Input Results

Testing

NutriScription

Recommendations

Consulting

Make the Sale

NutriScription

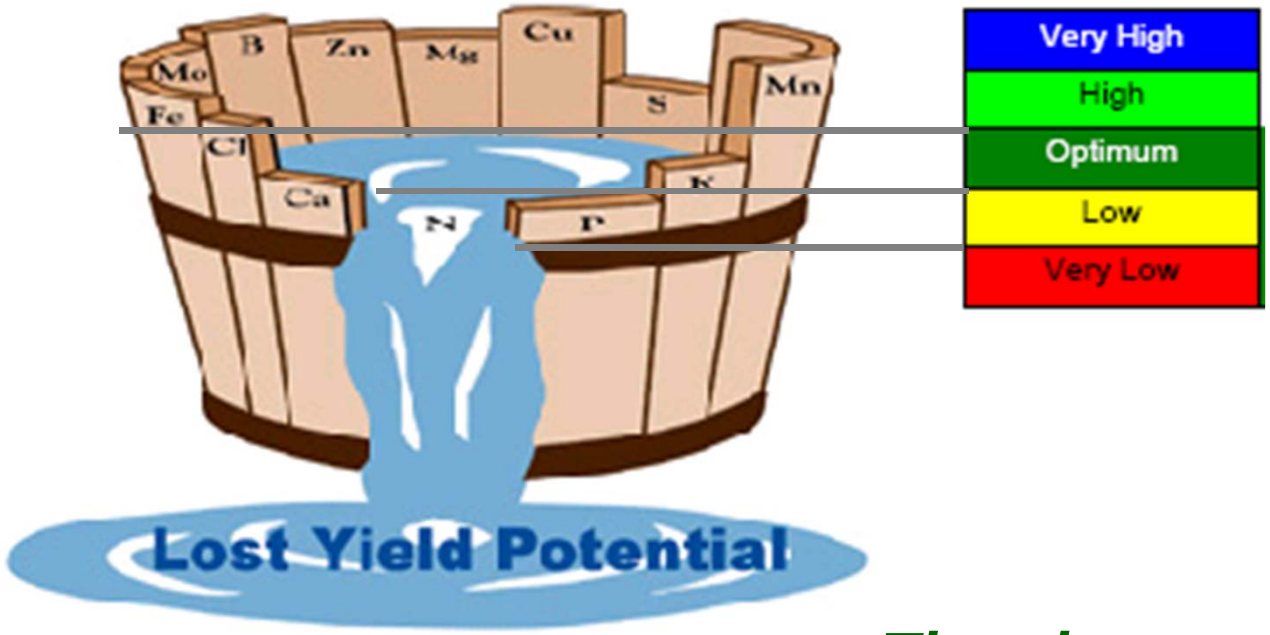
Grower sees *"NS"* as a translation of laboratory data offering a turnkey solution to a particular nutritional problem in the field.

CPS Salesperson sees *"NS"* as a tool customized to his/her market that helps sell specific products for each nutrient that's required.

CPS Management sees *"NS"* as an analytical tool that can glean agronomic data within local geographies to discern trends in order to market this or next season's products.

Justus von Liebig (1803 – 1873) was a German chemist known as the "father of the fertilizer industry" for his discovery of nitrogen as an essential plant nutrient, and his formulation of the **Law of the Minimum**

NutriScription looks at ALL nutrients, NOT just NPK



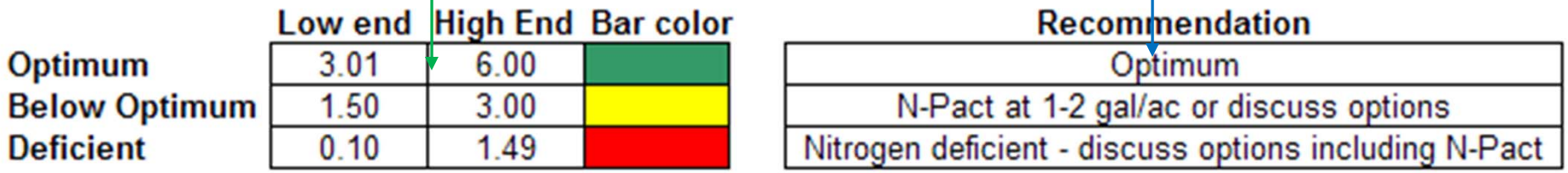
The plant never lies

NutriScription

What is a “recommendation”?

A recommendation connects a

nutrient range* with a potential product



	Low end	High End	Bar color
Optimum	3.01	6.00	
Below Optimum	1.50	3.00	
Deficient	0.10	1.49	

Recommendation
Optimum
N-Pact at 1-2 gal/ac or discuss options
Nitrogen deficient - discuss options including N-Pact

*** Source could be agronomic literature, NS certified labs or universities**

NutriScription

Graphically illustrate data

Lab data

Recommendation

Tissue: Corn - Midwest Labs - V8

Grower Name

Field Name 8B CORN 5684-5314

Crop Corn

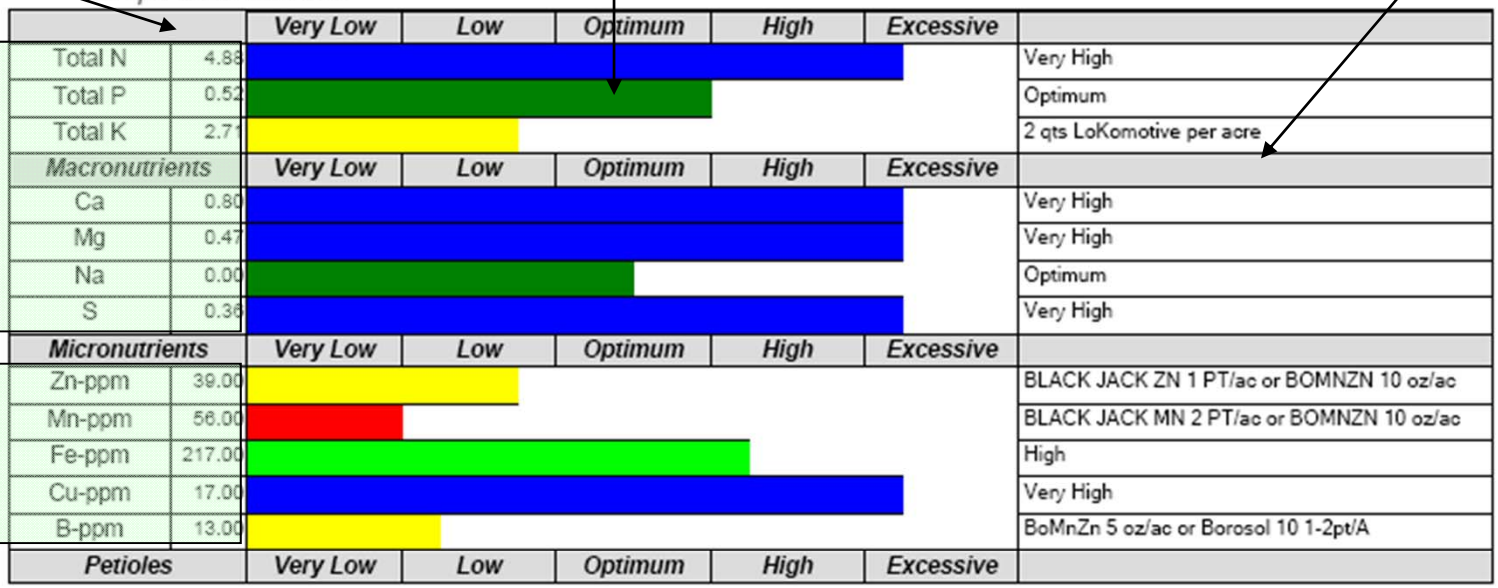
Sample Date 7/14/2009

Test Date

Field Rep Dan Snyder

Sample ID 3110257

NutriScription



		Very Low	Low	Optimum	High	Excessive	
%	Total N	4.88					Very High
	Total P	0.52					Optimum
	Total K	2.71					2 qts LoKomotive per acre
	Macronutrients	*Very Low*	*Low*	*Optimum*	*High*	*Excessive*	
	Ca	0.80					Very High
	Mg	0.47					Very High
	Na	0.00					Optimum
	S	0.36					Very High
	Micronutrients	*Very Low*	*Low*	*Optimum*	*High*	*Excessive*	
p.p.m.	Zn-ppm	39.00					BLACK JACK ZN 1 PT/ac or BOMNZN 10 oz/ac
	Mn-ppm	56.00					BLACK JACK MN 2 PT/ac or BOMNZN 10 oz/ac
	Fe-ppm	217.00					High
	Cu-ppm	17.00					Very High
	B-ppm	13.00					BoMnZn 5 oz/ac or Borosol 10 1-2pt/A
	Petioles	*Very Low*	*Low*	*Optimum*	*High*	*Excessive*	

Very Low
Low
Optimum
High
Very High

Comments:

Analytical data provided by Midwest Labs. Recommendations provided in this report are proprietary in nature whereby nutrient thresholds used as a reference may or may not match Midwest Labs ranges for this particular crop and growth stage.

Use of “soil & tissue” analysis to…

1. **Apply only those nutrients that are needed to meet the agronomic yield goal**
2. **Correct costly deficiencies before they reach critical yield loss stages**
3. **Aggressively push for increased yields when crops are in good shape (Adequate moisture, degree days etc.)**

The NutriScription Program is a key initiative in CPS focusing on sustainable agriculture for our grower customers!

PART 4:
Precision Placement of “P”
Use of “Pop-Up” Fertilizers on Corn

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“Why” <u>Precision Placement</u> of P

1. *Maximize yield* through <u>supplementation</u> of standard fertility programs
2. Highly efficient, low salt, loaded P products are EXPENSIVE
3. Allows us to maximize that investment through lower application rates in furrow
4. In furrow applications are usually more efficient than broadcast

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“What” Are We Applying

- Riser F/A (7-17-3) - P based starter with Cu, Fe, Mn, Zn used at 2.5 gallons/acre

OR

- Black Label® Zn (6-20-0) – Organic Acid based P starter with Zn used at 2 gallons/acre

PLUS

- Accomplish LM – Concentrated biochemical fertilizer catalyst used at 2 pints/acre

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“What” Are We Getting

- *Since the ear is determined at V5 stage*…
- A strong, healthy plant at V5 allows us to reach the yield potential by maximizing the number of rows.
- Assuming adequate fertilization after the ear is determined….more rows equals more yield!

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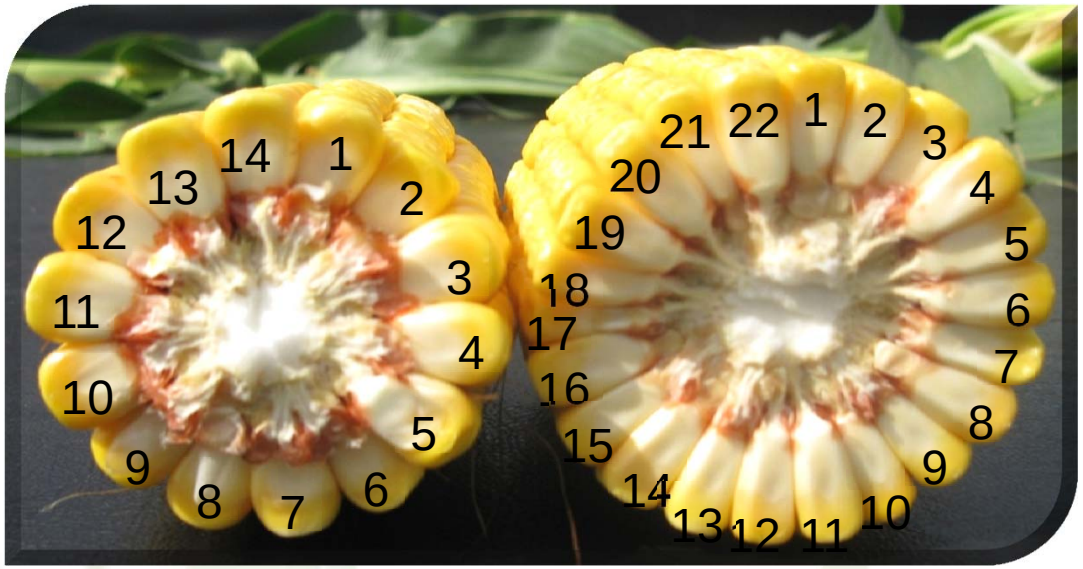
Precision Placement of “P”



Same variety, same day, same field…

The <u>only difference</u> was the “in furrow starter program” providing the plant the right the opportunity to reach it’s potential!

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PART 5:

Nutrient Efficient Fertilizers and Applications

Nutrient Efficiency

1. Controlling N loss
   – Management of denitrification, volatilization and leaching ESN® SmartNitrogen
2. Highly efficient foliar applications
   – Combined with highly efficient product formulations LoKomotive®
3. Supplementation of standard programs with high efficiency products MAXIMUM N-Pact®

Crop Production Services CPS

Nutrient Efficiency

- NutriScription tissue sampling to diagnose and prescribe the right product to "*Feed Your Crop's Hidden Hunger*"™

- Accomplish family of fertilizer catalyst products to both protect and "free up" soil applied fertilizers

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Sustainable Agriculture

NutriScription®

NutriScription®

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Summary…

- *CPS* - helping our Grower Customers ensure Sustainability…
  - *Starts with the right seed…*
    - *It's all about traits!*
  - *NutriScription "Soil/Tissue" Sampling Program…*
    - *The right products at the right time!*
  - *Precision Placement of "Phosphates" with Starters And Use of Nutrient Efficient Fertilizers*
    - *The right products in the right place at the right time!*

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Questions?

Thank you!!

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