Tools for P Management

John Fulton
Lake Erie Algae Bloom

Dissolved Reactive P (DRP): < 2 lb/ac; 3 to 5% of application rates
Key Phosphorus BMPs in Ohio

1) Cover Crops
2) Subsurface Placement (incorporated or injected)
3) Buffer Strips

VRP – important!
GOAL:
Growing top yields with least amount of fertilizer possible...
Nutrient Application Windows

Field Intel plus Executional Precision
Field Execution

MAP Rx --- 0 to 300 lbs/ac

Rx for Potash --- 0 to 300 lbs/ac
P Placement Options

Planter

Sub-surface

Surface
Starter Fertilizer Placement

Placement Options
- Surface dribble
- Pop-up (sub-surface)
- 2x2 Starter (sub-surface)
- Relay (Pop-up + 2x2)

Example Rates and Material
- Pop-up
  - 3.3 to 3.5 GPA
  - 10-34-0 with 1 unit of zinc
  - 6-16-6 with 1 unit of trident
- 2x2 Starter
  - 15 to 30 GPA
  - 28%
  - 50/50 mix 10-34-0 and 28%
Starter Fertilizer Storage & Placement Options

Planter Frame Storage

Tractor Storage

Towed Cart

Planter Placement Options

Source: http://www.schaffert.com

Source: http://farmcountyline.blogspot.com
Control: 100% Surface Applied

2x2

Relay

Food, Agricultural and Biological Engineering
Strip-till / Injection Technology

Strip-till Considerations

- **Proper P placement** – universal solution may not be possible with varying soils and terrain.
- **Ground speed** – field capacity (ac/hr) must not be compromised or limited adoption.
- **RTK GPS Correction** – recommended to either center planted row within strip or relative to nutrients.

**Benefits**

- Place P in natural uptake zone where nutrient stratification exists.
- Breakup compaction and preferential flow paths for DRP.
- Dual product options

Orthman 1tRIPr (one-tripper) strip-till machine

Source: http://precisiontillage.com/
High-Speed Strip-Applicators

• Low disturbance – option for no-till
• 6-10 mph
• Dual product options

EXAMPLE --- John Deere 2510H
Strip-till Execution --- RTK / Guidance Line Management
Spreaders
Extend in-season application window

- Good yield response from broadcast P.
- Timing is important to reduce DRP run-off.
- Consider use when nutrient stratification exists.

Dual or multiple hopper setups
Additional Tools

APPs and other technology

Imagery

Data driven VRP approaches
Additional Nutrient Tools

- Small kits and hand-held devices
- Nutrient and weather APPs
- APPs for On-farm research
- OEM APPs

New Leader Size Grade Number (SGN) & Crush Strength Test Kits
Identify varying soil OM, CEC, water holding capacity, and texture.
Directed Soil Sampling and Scouting Sites
Dry, bare soil RGB

Class
- Dark
- Light
- Medium
ADVI Image; July 12th
Nutrient Decisions – Predicted Corn Yield

YIELD MAPS
- Good for identifying management zones by production levels (placement).
- Good for using within P and K management (removal map for helping establish rate).

- Field-by-field
- Plan soil sampling sites
- Early P removal estimate and nutrient planning
Final Comments

• Toolbox expanding for precision P approaches (agronomy + environment)

• New application tools and technologies to accurately execute on a field-by-field basis.

• Select the right tools and collect the proper field intel to execute (data driven options).
2018 PrecisionU: Nutrient Technology

Beck’s Hybrid’s Ohio PFR
London, OH
(right beside Farm Science Review)

Thursday, January 11, 2018
Digital Agriculture
Providing solutions to meet world demand

John Fulton
Fulton.20@osu.edu
334-740-1329
@fultojp

Ohio State Precision Ag Program
www.OhioStatePrecisionAg.com
Twitter: @OhioStatePA
Facebook: Ohio State Precision Ag