Broadcast Technology

John Fulton

The Ohio State University

“Getting It Right”

Maximize utilization of applied nutrients.

Fertilizer Placement Tools

Surface Application

Broadcast

- Cost-effective
- Cover large acres in short period of time.
- Multi-bin / product setups

Late-season N Application

- Surface application ~V10 thru R growth stages.
- Requires high-clearance applicator
- Delayed total N decision
- Provide late boost

Sub-surface Application

Planter Banded Starter

- 2x2 and/or in-furrow starter fertilizer.
- New technology available such as 2x2x2 and in-furrow placement.
- Easily installed on existing planter.

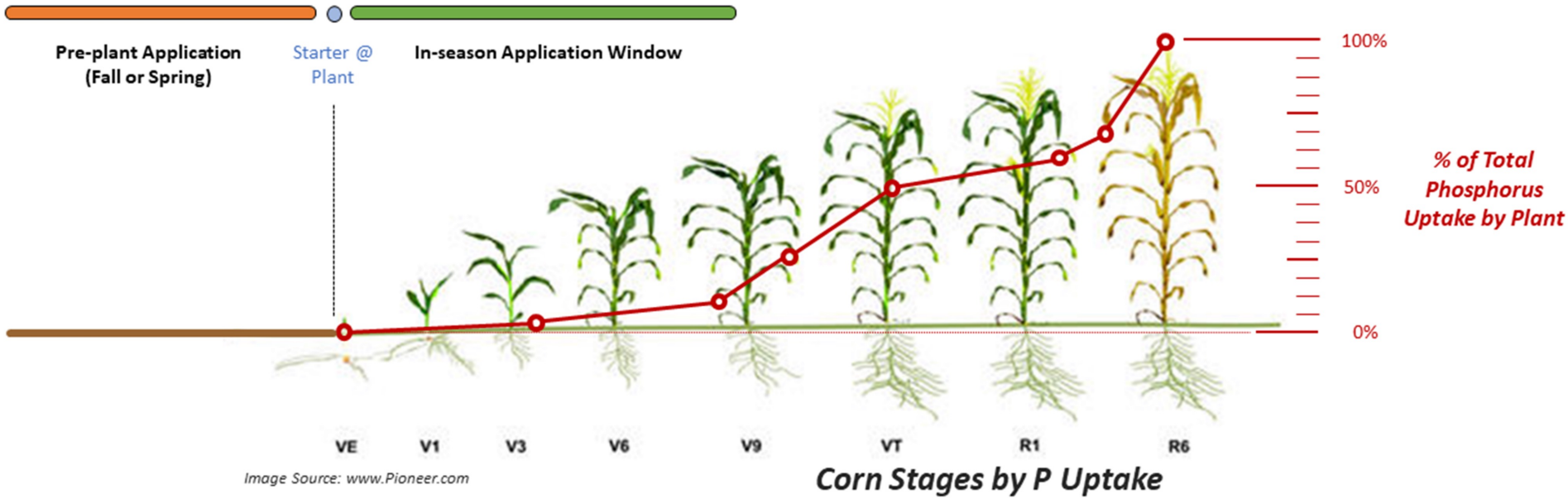
Side-dress

- Coulter-style injection.
- Typically liquid product
- V2 through V5 timing
- Good nutrient uptake efficiency and a profitable application.

Injection (Liquid or Dry)

- Injection through Strip-till, shank, or coulter-style units.
- Place fertilizer accurately within the soil profile.
- Potential for reducing pre-plant passes.

P Application Windows vs. P Uptake in Corn



Surface application options

AGCO AgChem AirBoom

Kuhn

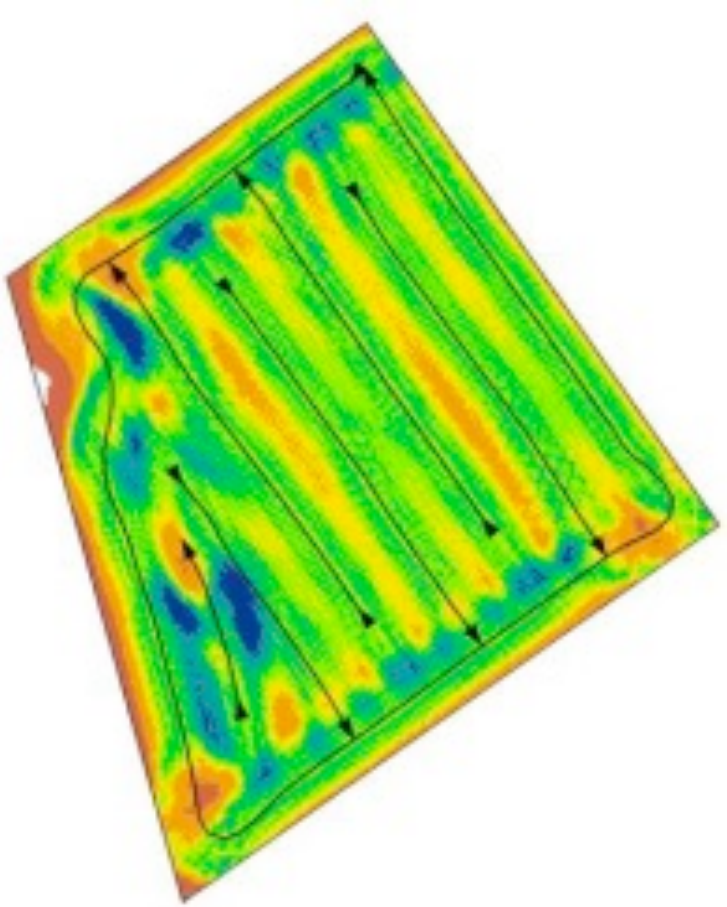
New Leader

Broadcast Spreaders

Spinner Spreaders

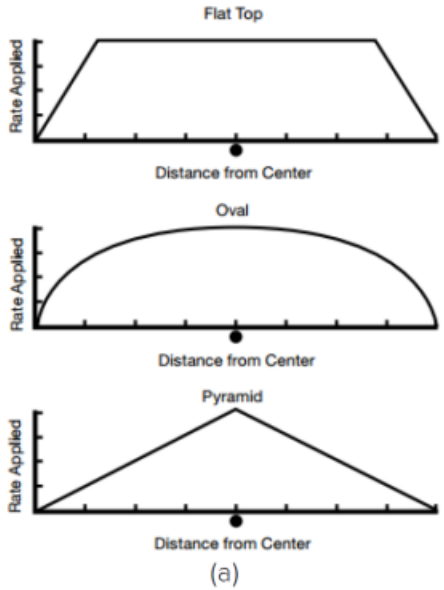
Concerns with broadcast spreaders

- **Fixed-rate application can be tough**
- **Limited feedback to operator about quality of application.**
- **Improper placement amplifies in-field variability and impacts crop production.**



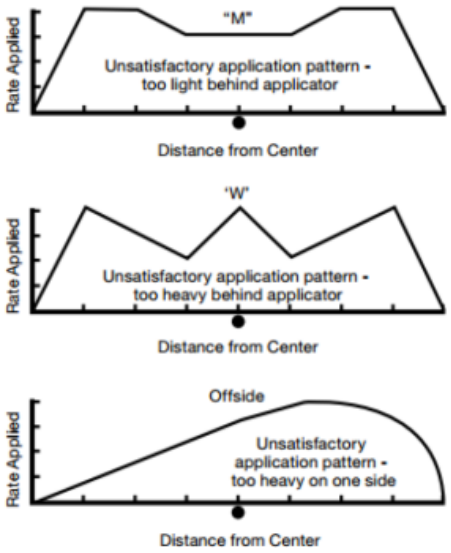
Distribution Patterns

Desired



(a)

Undesired



(b)

Calibration Procedures

Metering

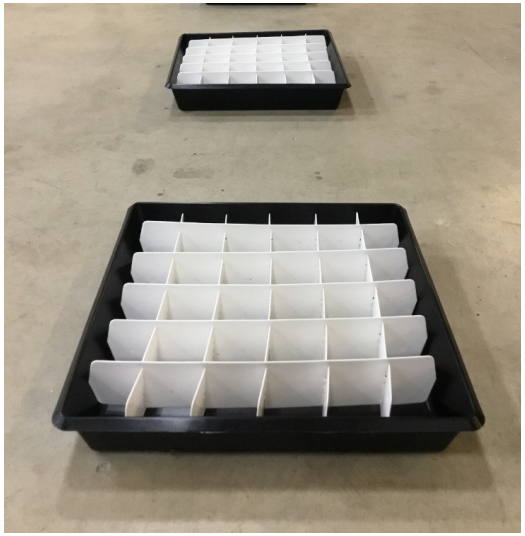
- Catch test
- Expectations = <2% error with current spreaders and technology

Distribution

- Pan test
- Proper pans, if serious
- Expectations = uniform distribution (CV=10% to 15%)

Proper Pans

Correct size pan and baffles

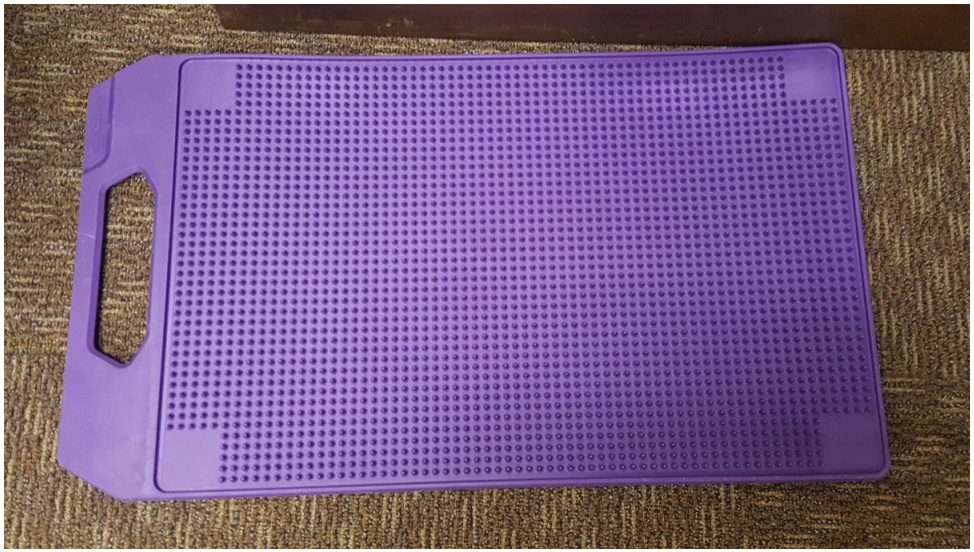


Calibrating Fertilizer and Lime Spreaders Procedure

- Pans placed in 2.5 to 5 ft. intervals
  - Except trays 7 and 9, which is 6 ft. from tray 8
- Pans must have grid baffles to prevent fertilizer from bouncing out
- Must be level with each other

AMAZONE


1. Selecting the right fertiliser spreader and working width in the App
2. Layout of where to position the mats
3. Taking a photo of the mat
4. Confirmation of the photographed value
5. The value for each mat is displayed in the App
6. The lateral distrib tion and the setti recommendation are displayed



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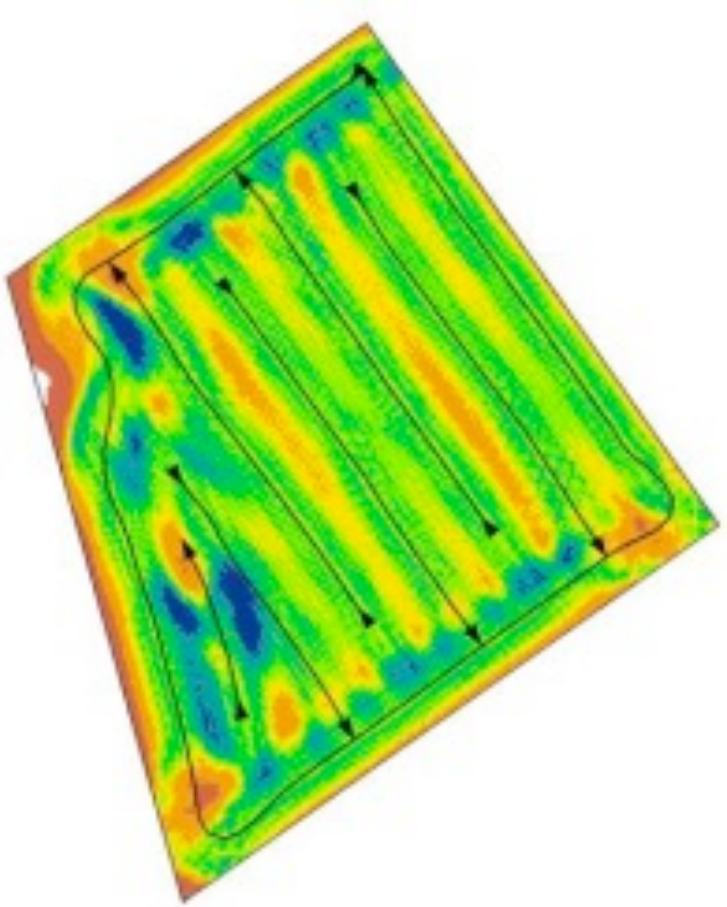
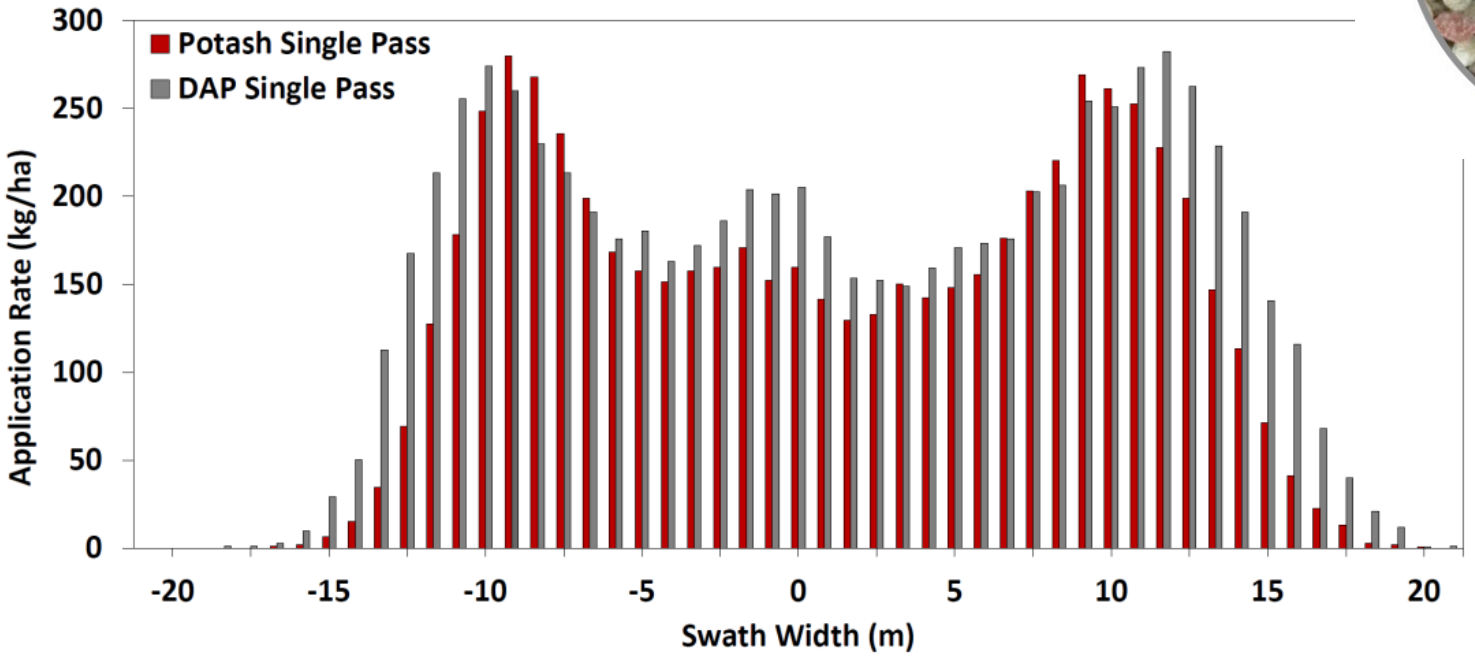
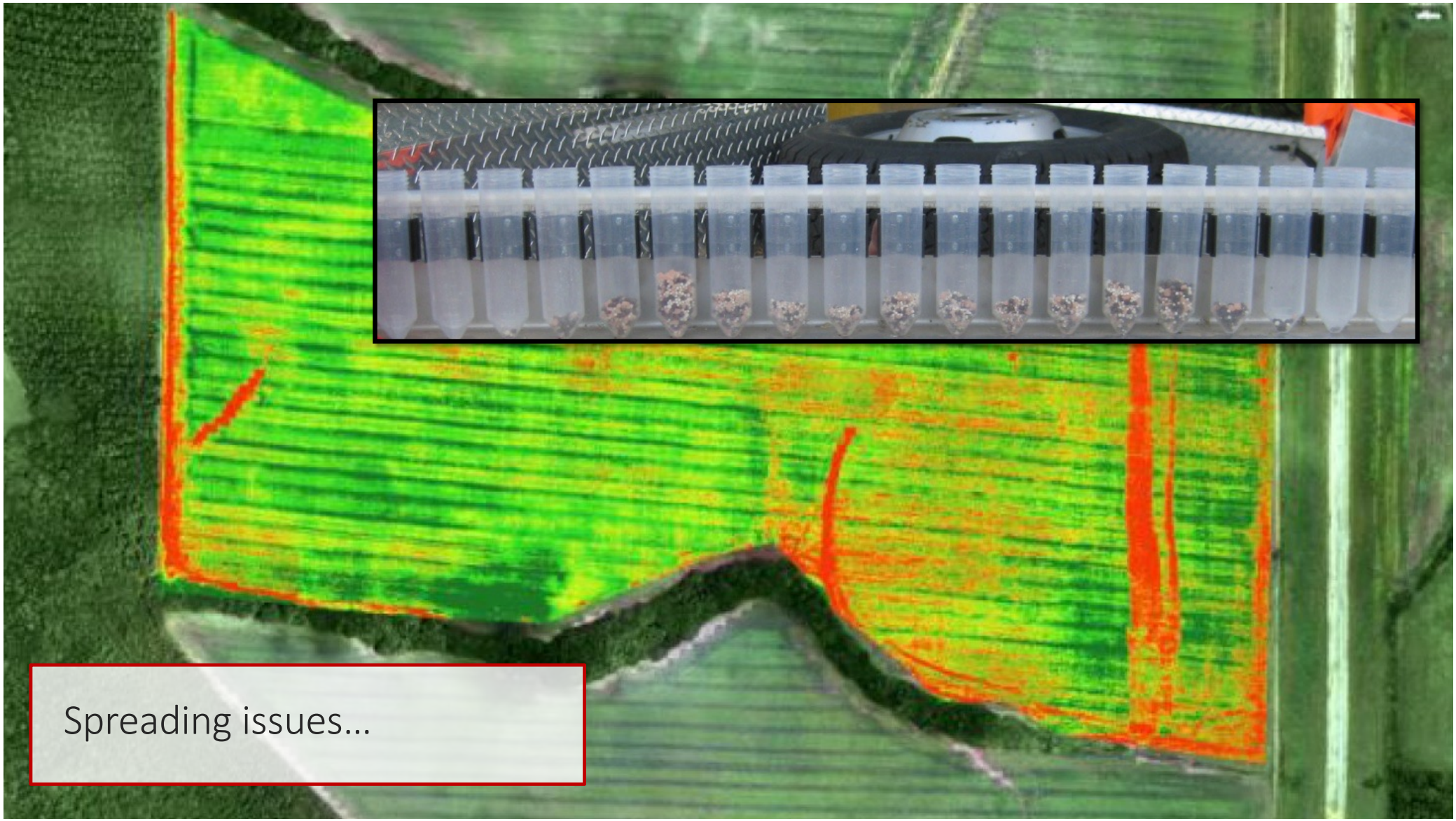


Spreading blends

Potash-DAP Blend

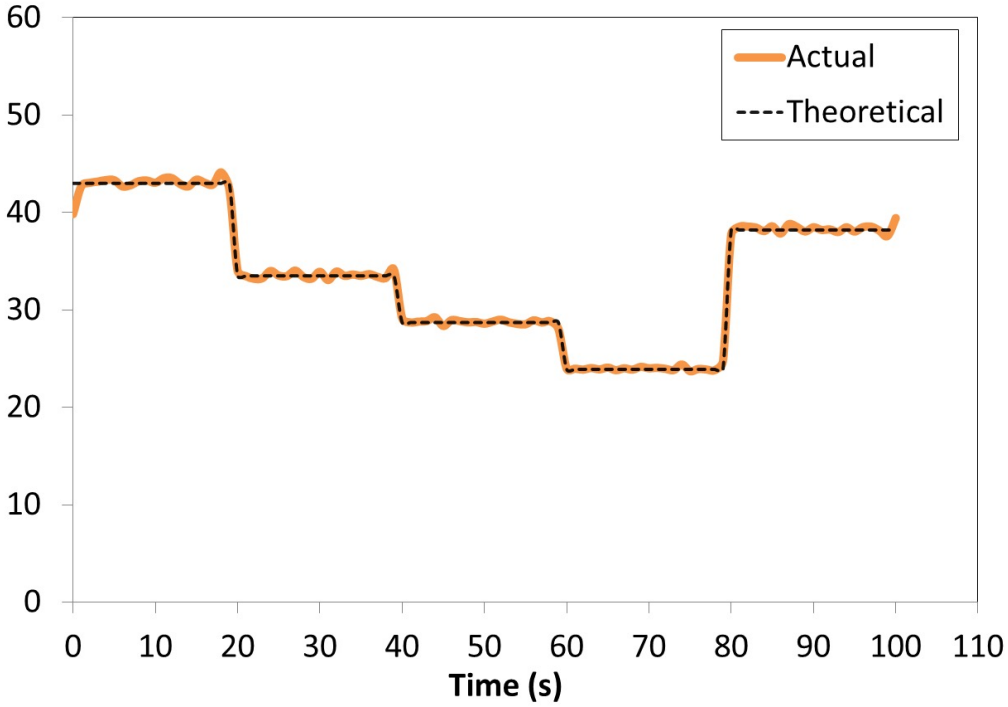



Spreading issues…

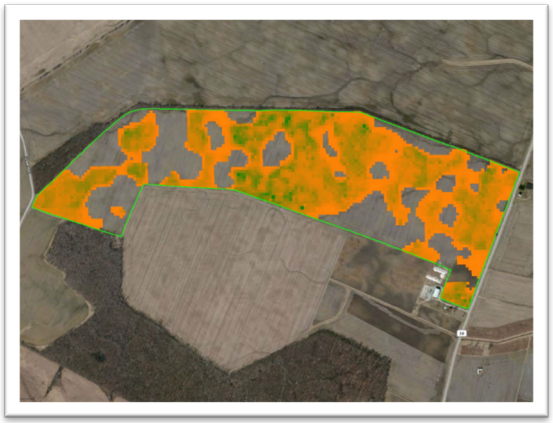
Modern Spreading

In-cab Displays

Rate Response – PWM Valves Today



<u>Key Learning for fertilizer applicators</u> – must be setup and tuned properly for proper response.



SPINNER SPREADER TECHNOLOGY

Automatic Section Control

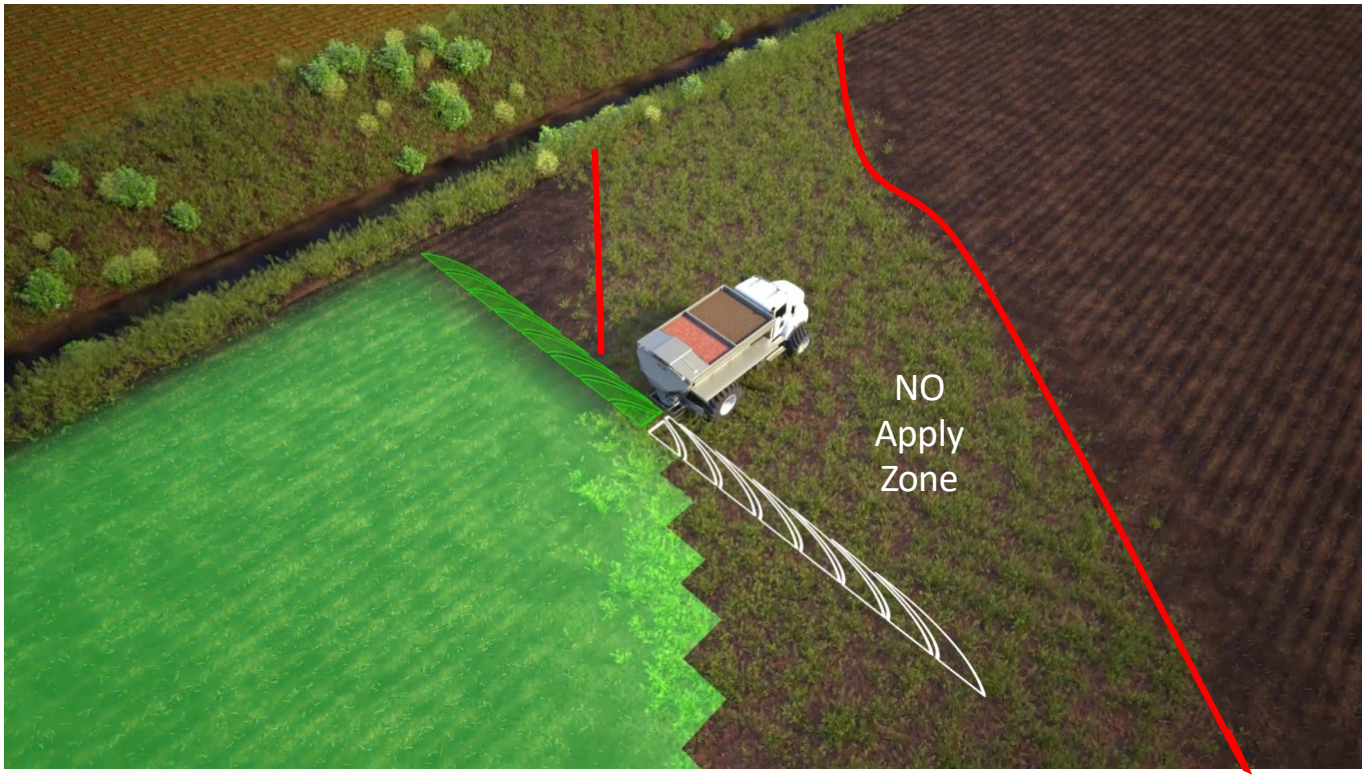


Image Source: New Leader

SPINNER SPREADER TECHNOLOGY

Border Spreading

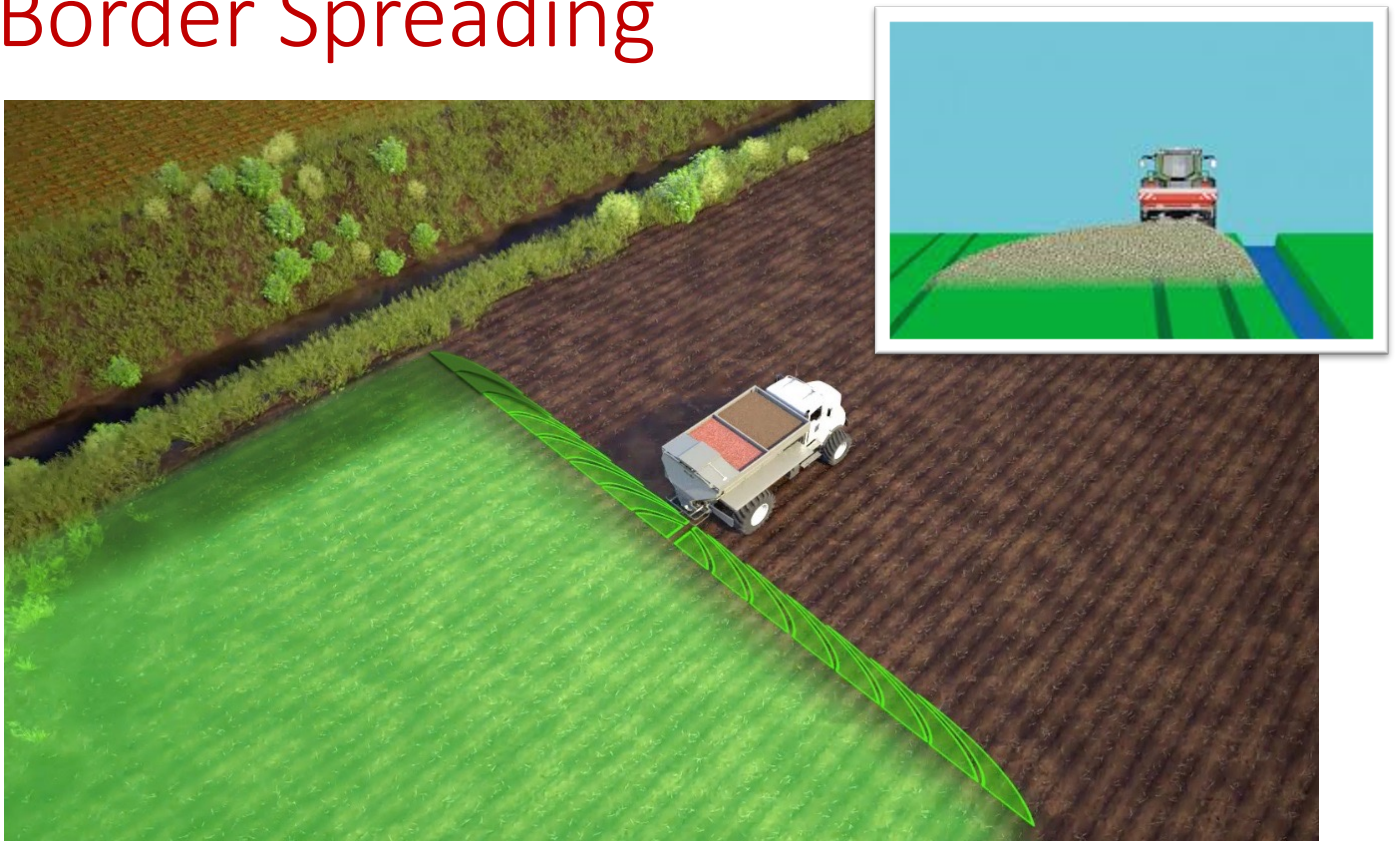
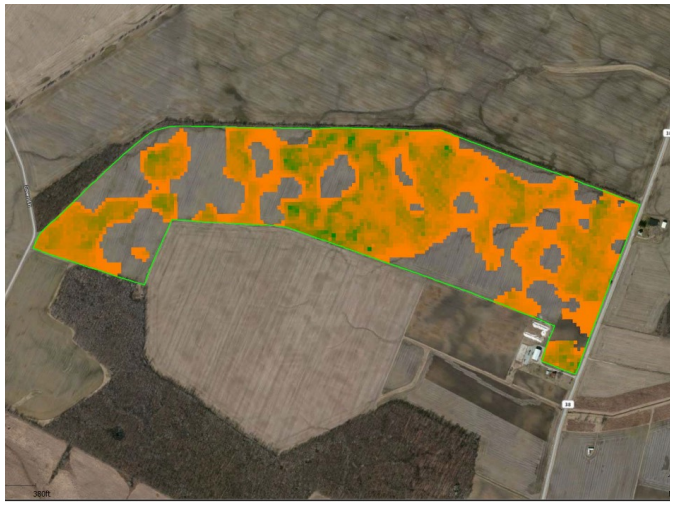


Image Source: New Leader

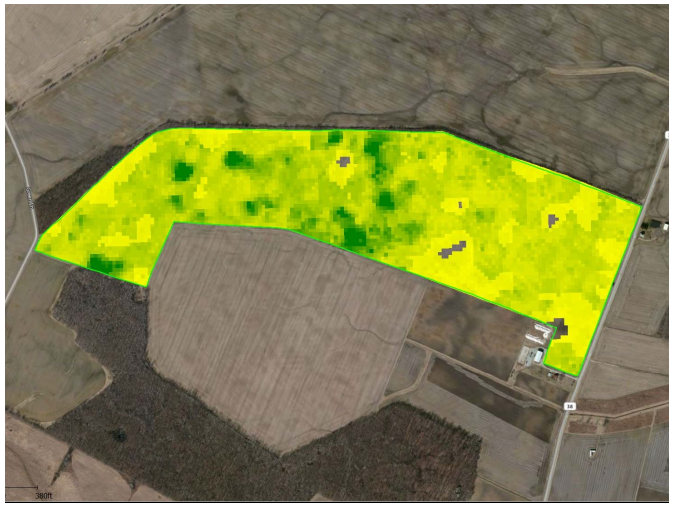
FIELD EXECUTION CONSIDERATIONS

2 Fertilizer Rx's with 1 Field Pass

MAP Rx --- 0 to 336 kg/ha



Potash Rx --- 0 to 336 kg/ha



Most companies offer solutions to **carry and independently meter 2 or more products** on their fertilizer application equipment today (NO need for blending fertilizer sources).

Dual-bin spreader

Dual or multiple bins

Rate controller with VRT and automatic swath control technology

AGCO Air-Max

- 2-Bin setup

VRT + Automatic Section Control

Capability to execute 2 prescription maps.

eFields is an Ohio State University program dedicated to advancing production agriculture through the use of field-scale research.

https://digitalag.osu.edu/efields

Digital Agriculture

Providing solutions to meet world demand

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