

# David Emerman, Chief Community Officer

December 6, 2023

## H2Ohio TAP



**Environmental  
Protection  
Agency**

# H2Ohio TAP



Scotts Miracle-Gro



Sea Grant  
Ohio Sea Grant College Program



cleveland  
water  
alliance



Ohio  
Department of  
Agriculture

PROMEDICA

xylem  
Let's Solve Water

The Nature  
Conservancy



Ohio  
Ohio Environmental  
Protection Agency



ALLIANCE for the  
GREAT LAKES

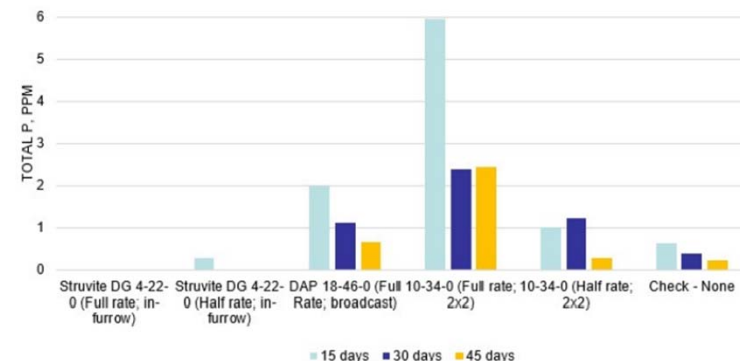
Ohio | Lake Erie  
Commission



# Dispersible Granule Struvite Fertilizer

- Submitted by The Andersons Plant Nutrient Group
- High efficiency fertilizer in precisely engineered particle sizes; and
- Pairs with plant biochemistry to only release nutrients when crops are ready to absorb them

TOTAL P IN LEACHATE | GREENHOUSE PHOSPHORUS EFFICIENCY STUDY | 2016



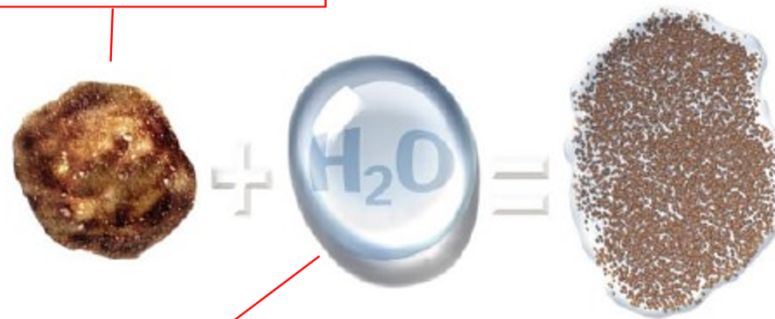
Pioneer P0965AM1  
Bushels/Ac

Treatment	Trial #1	Trial #2	Trial #3	Trial #4	Trial #5	Average
Standard Phosphorous	174.3	159.0	159.0	175.1	159.3	165.4
Struvite - 1/2 Rate P	170.0	164.0	164.4	175.3	156.8	166.1



Schwing Bioset Struvite Reactor in service, Tucson, Az

Dispersible Granule: Organic lignin binder coats 100 mesh particles of struvite. This is applied to the field with traditional agricultural equipment.



The granules rapidly disperse into the soil (don't remain on surface) and break down again into tiny struvite particles when in contact with water in the field.

**H2O<sub>2</sub>Ohio**  
*Technology Assessment Program*

Insoluble struvite remains at the root zone and does not leach but is an available P source upon demand by the root





Struvite  
Application in  
Sandusky  
County,  
October 10,  
2023.





Application pass in field;  
Myerholtz Farm, Sandusky  
County, October 10, 2023



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Treatment (Product & Amount)

A = Full Rate of MAP

B = Half Rate of MAP

C = ZERO Phosphorus

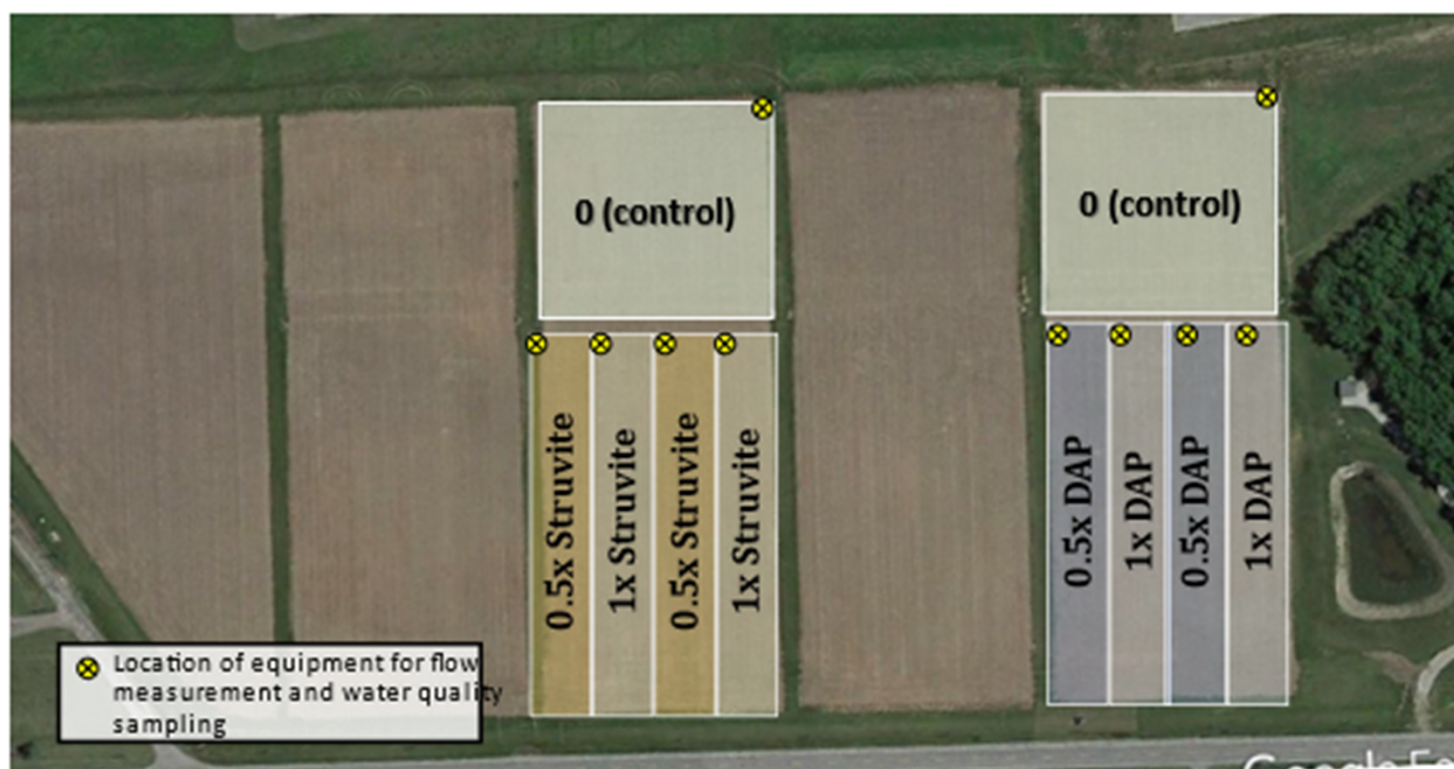
D = Full rate of STRUVITE

E = Half Rate of Struvite

Each strip is 60' wide (1 pass of corn planter, 2 passes of Combine, 3 passes of Strip Till)



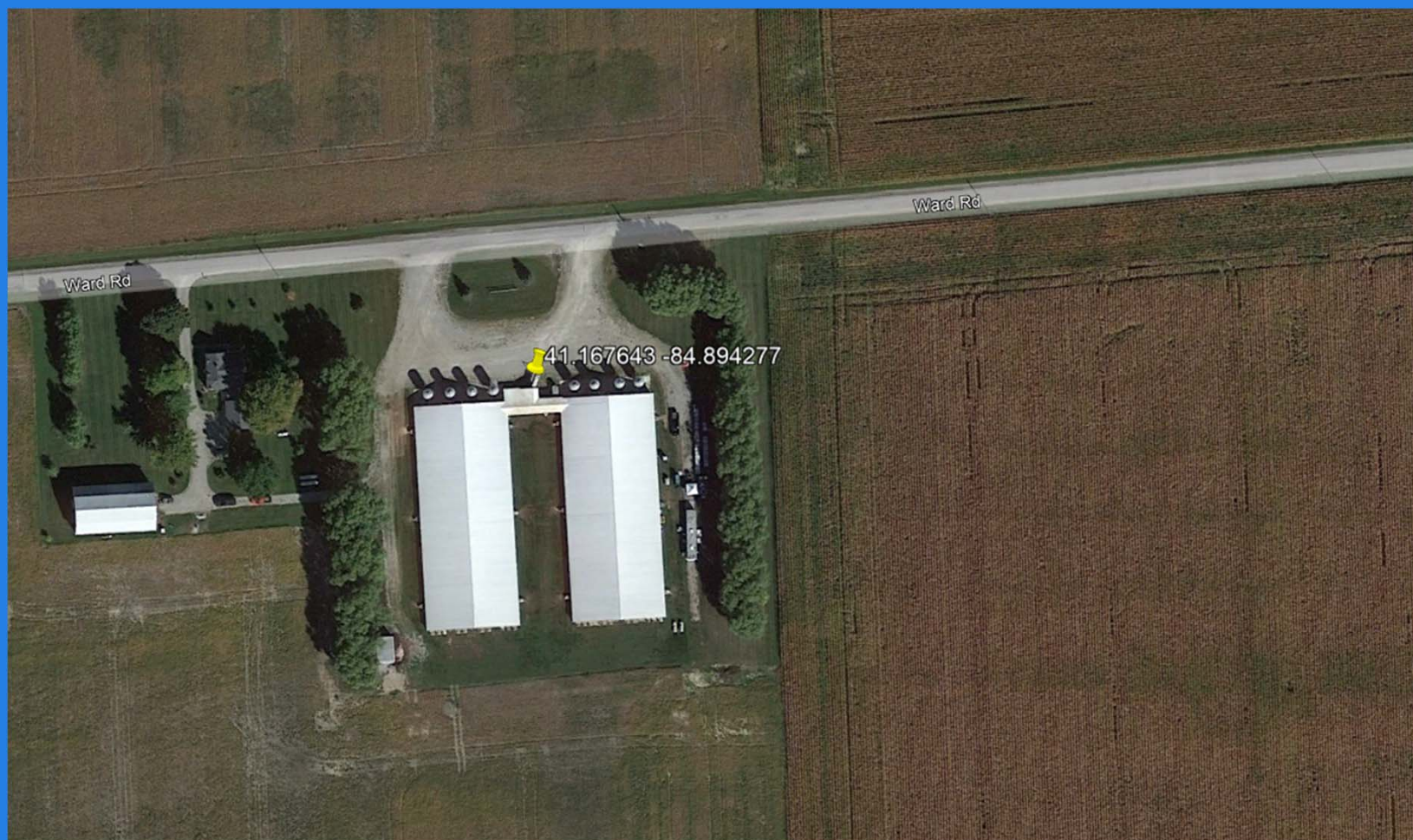




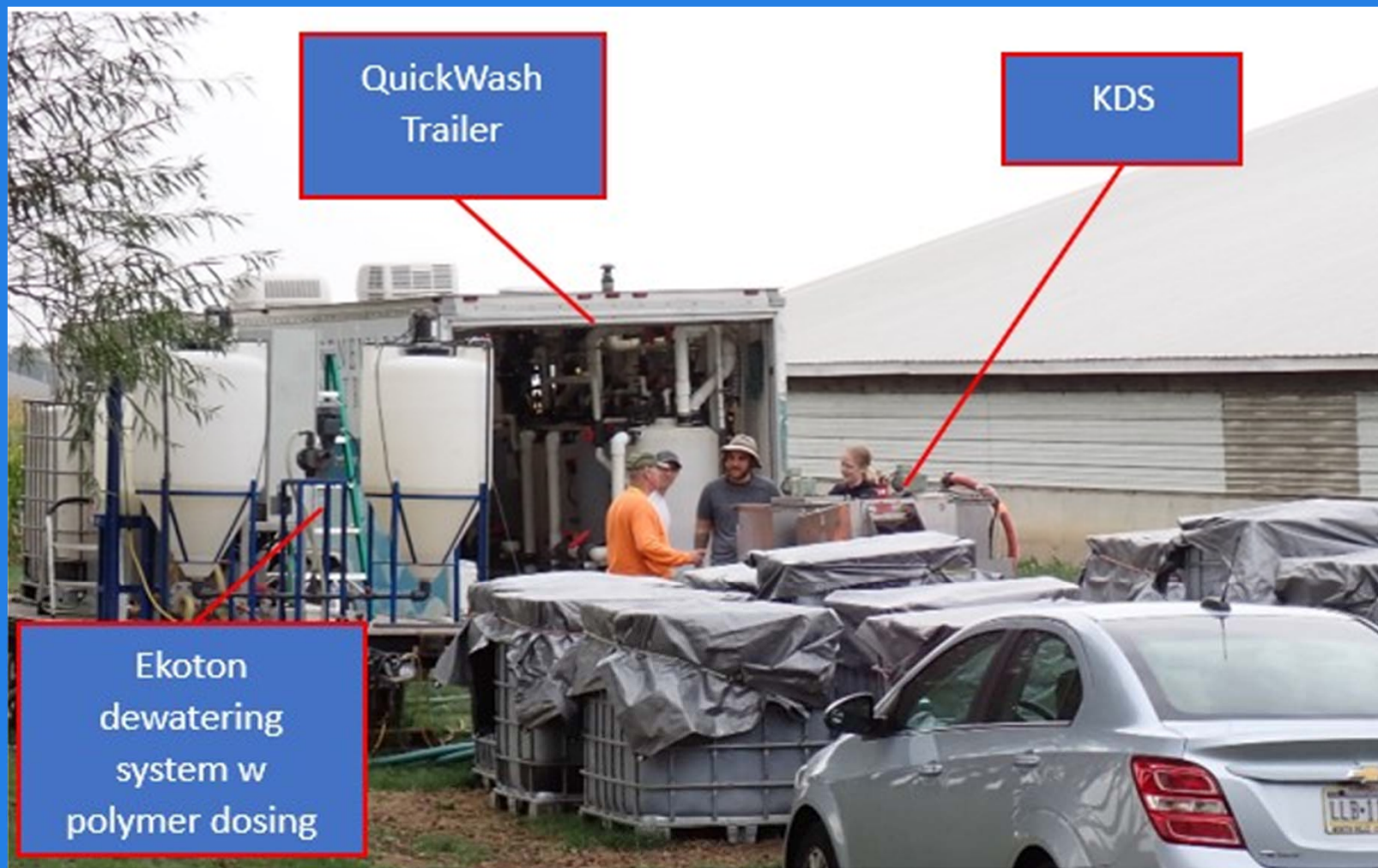
**Figure 2. Experimental design and water quality monitoring (yellow circles with a cross) locations for the proposed struvite study. Five main treatments, replicated twice, will be**

Hog Farm location  
in Paulding  
County Ohio  
where QuickWash  
will be used.













Kendensha Rotating Disc Separator (KDS). Solids are screened from the raw manure, collected and sent to KBI (18-20% solids). Filtrate drops below, pumped through green hose to QuickWash trailer



Looking from the back of the trailer at the QuikWash system. Filtrate from KDS goes to this process where pH is lowered with  $\text{H}_2\text{SO}_4$  followed by raising pH with hydrated dolomitic lime slurry. This precipitates out  $\text{P}_2\text{O}_5$  (96.5%). This material goes to the Ekoton for dewatering next.



Lab Number	P338
	<b>lbs/Ton</b>
Moisture	365.80
Total Nitrogen	7.80
Phosphorus (P)	6.20
Available Phosphorus (P)	4.42
Available Phosphorus as (P2O5)	10.14
Potassium (K)	18.62
Potassium as (K2O)	22.38
Calcium (Ca)	545.16
Magnesium (Mg)	8.50
Sodium (Na)	10.46
	<b>lbs/Ton</b>
Boron (B)	0.067
Iron (Fe)	1.043
Manganese (Mn)	0.085
Copper (Cu)	0.160
Zinc (Zn)	0.485



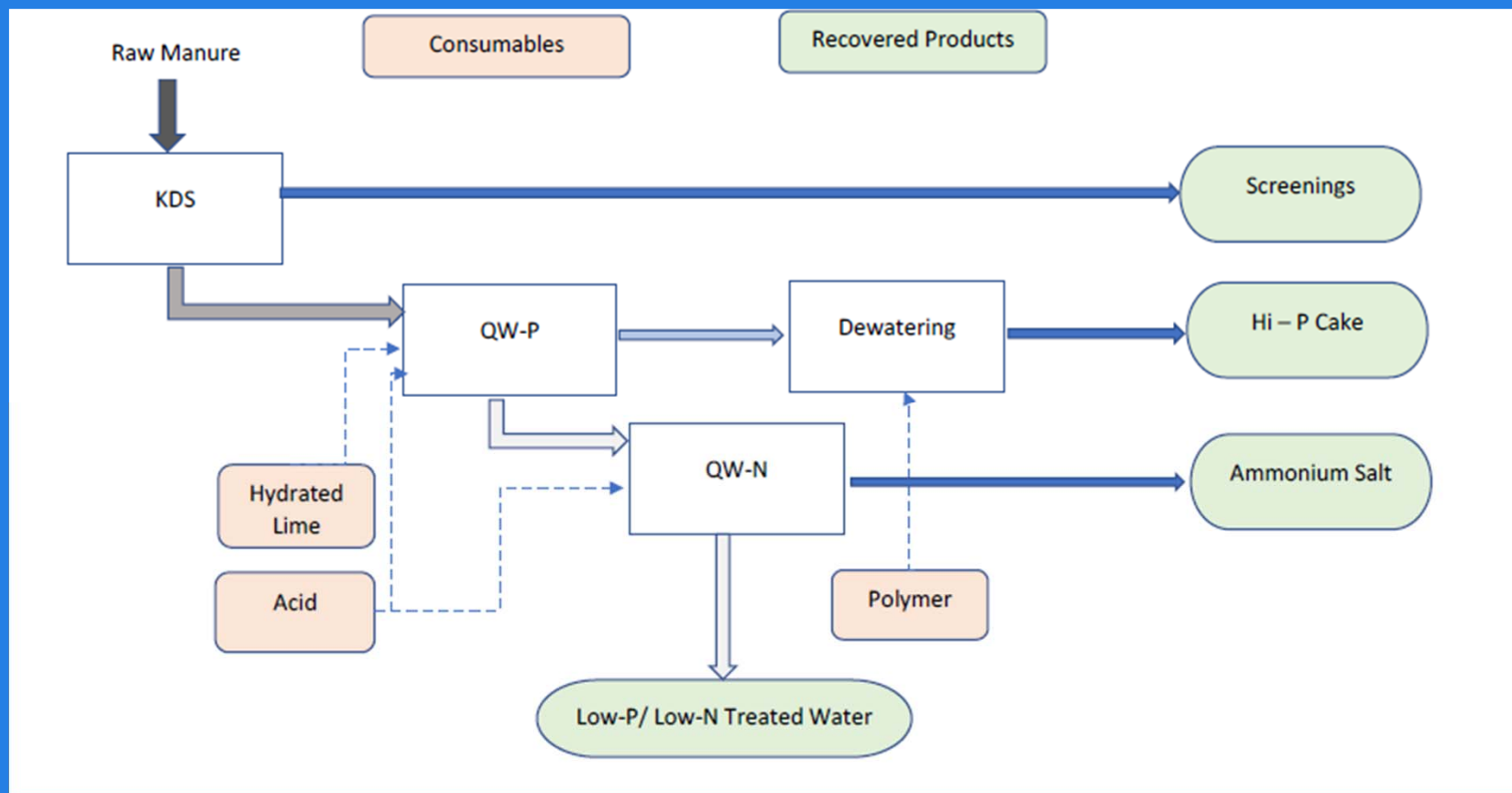
Lab Number	9640
Corresponding solids data	P338
	<b>lbs/1000gal</b>
Moisture	8200.4
Mineral Matter	49.70
Lost by Ign (Org M+)	33.96
Total Nitrogen	13.17
Ammonium-N (NH4-N)	12.01
Nitrate-N (NO3-N)	
Organic-N	1.16
Phosphorus (P)	<0.005
Phos as (P2O5)	
Potassium (K)	15.41
Potassium as (K2O)	18.56
Calcium (Ca)	2.73
Magnesium (Mg)	
Sodium (Na)	4.89
Sulfur (S)	1.57
	<b>lbs/1000gal</b>
Boron (B)	0.022
	0.061

- Submitted by Applied Environmental Solutions
- Two-stage process that recovers phosphorus from wastewaters and liquid manures using acids and hydrated lime; and
- Product that can be used as a fertilizer

# QuickWash® Phosphorus Recovery



Ekoton dewatering system. This takes the solids produced from the QuickWash process and removes water producing 18-20% filter cake solids that contains 96.5% of the P2O5; this is sent to KBI as Hi-P cake.





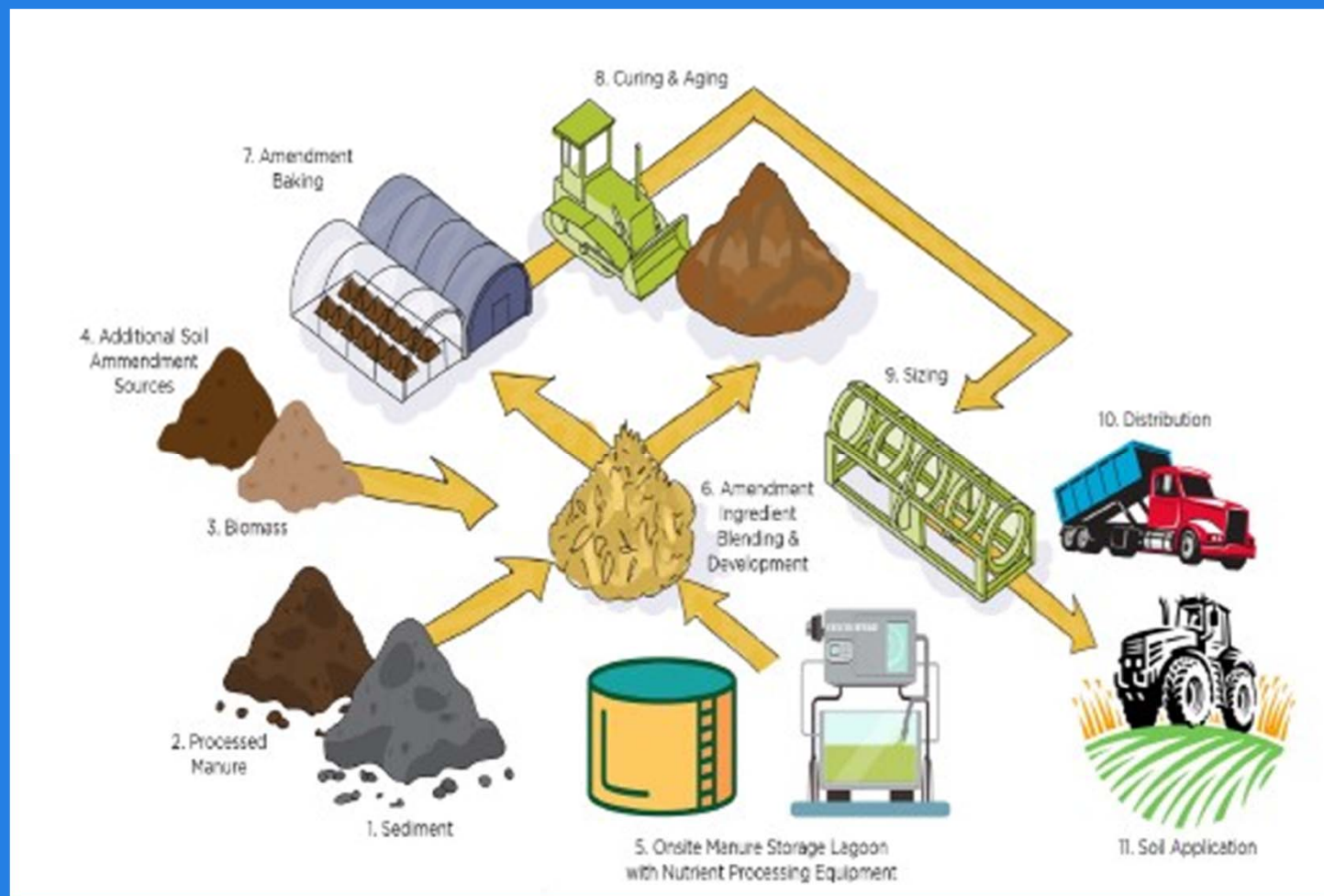
**Kurtz Bros., Inc.**

*We make the good earth better!™*

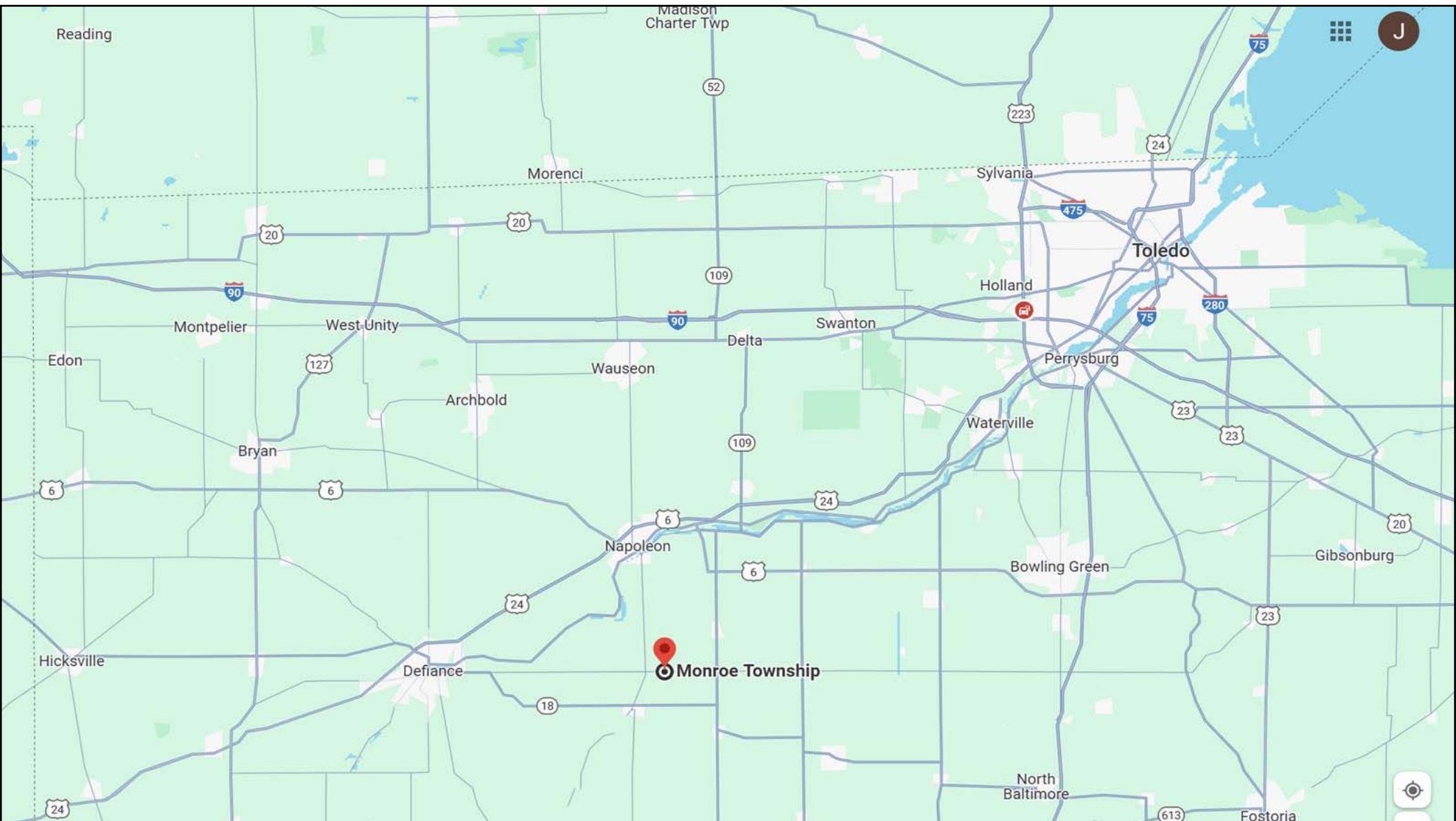
## Nutrient Regeneration (Regen)

- Submitted by Kurtz Bros., Inc.
- Regen is a process for removing nutrients from biomass sources, such as manure lagoons;
- Converts nutrients into stable commodity products that can be marketed and distributed throughout a watershed; and
- Provides an alternative nutrient source to synthetic fertilizers.











- Submitted by Ecosystem Services Exchange
- “Weatherproofs” cropland fields by actively controlling water levels in soil; and
- Improves both the environmental performance of agriculture and farm economic viability in tile-drained landscapes.

## Automated Drainage Water Management |



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