Evaluating the 4R Nutrient Stewardship Concept and Certification Program in the Western Lake Erie Basin

How is 4R working in Ohio?

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PROJECT GOALS

- **SOURCE**: Different solubility sources of P and still to be determined for N
- **RATE**: Monitor tile drainage discharges of N and P when rates are varied
- **TIME**: How do changes in the application timing of N and P affect loads and concentrations in drainage discharge
- **PLACE**: Compare how application placement influences N and P concentration and loads in tile drainage discharge

PROJECT RESULTS

The concentration on N and P in tile drainage discharge is higher during the growing season, while nutrient load is greater in the non-growing season. There is no time of the year that tile drainage discharge has no N or P.

- **SOURCE**: Solubility of P fertilizer applied will influence P loss to tile drainage; however, this will differ by soil type and rate.
- **RATE**: Rates and soil tests less than or at recommended levels are associated with lower P losses from tile drains.
- **TIME**: Losses of dissolved reactive phosphorus are greater with late fall, winter and early spring applications than with applications made in August and September.
- **PLACE**: Subsurface P placement decreases loss of dissolved phosphorus to tile drainage.

MORE PROJECT RESULTS ▼

Figure 1: Total P Loss Potential in relationship to soil test P and water leaving the field as surface runoff or subsurface drainage. As more water leaves the field, total P loss increases across soil test P values.

Project dates: Spring 2014 – Winter 2017

Project Number: 4RN-09


MEET KEVIN

“Water quality problems in Ohio are vast, none more so that the algal bloom issues in Lake Erie. While agriculture is the primary focus, we must also understand that it is the American farmer that has been burdened with the task of helping to feed 9.7 billion people by 2050. That charge will not be possible without fertilizers and advancements in management. Crop production agriculture is a “leaky” system. The 4Rs of nutrient stewardship offer the opportunity to balance productivity with the environmental footprint rather than focusing on just one or the other.”

Kevin personally enjoys spending time with his wife and six children hiking in nature, boating and fishing, and gardening and cooking.

PUBLISHED REPORTS


2 Papers currently in review.

WHAT DO WE DO NEXT?

- Continue to collect data and evaluate the results of the field studies underway and examine other 4R management.
- Track changes in water quality at other sites to determine the larger impact of implementing 4R practices.