

Protecting Your Phosphorus Fertilizer Investment

Your investment in phosphorus fertilizer can be substantial, depending on soil P levels and crop needs. A typical application for 2 year crop needs can range from \$38 - \$51 per acre. While average losses of P₂₀₅ (phosphate - the fertilizer form of P) usually average only 1-2 lbs. per acre per year, much larger losses can and do occur under certain conditions. These losses can be off-site losses, into a stream or other waterbody, or they can occur within the field, moving from one part of the field to another.

Variable Rate Technology (VRT) is used extensively for very good reasons. It is a highly precise and cost-efficient method of applying fertilizer. However, if substantial off-site losses or within-field movement occurs, the extra expense of a VRT application is wasted.

The question then is, "How do I protect my P fertilizer investment?" There are several answers to that question. We at Sunrise Cooperative want to help you find some methods that fit your operation and that you can easily and effectively use to protect yourself from excessive P losses. Here is our list - you may have ideas of your own that you would like to discuss.

- Inject as much P fertilizer as is practical. This may be in the form of starter, or deep placement in combination with strip-till, or with the use of disc-equipped shallow placement rigs.
- Do not surface apply P fertilizer before a significant rain event (>1 inch of predicted rain in the next 12 hours), or on frozen or snow-covered soil. Losses from these situations can be very large
- If surface application is used AND tillage is already planned, perform the tillage before the next rainfall event. This will sharply decrease soluble P losses (which is the main culprit in harmful algal blooms) but may increase sediment bound P losses due to increased soil erosion. It is a tradeoff.... hence the next recommendation.....
- Begin the transition to continuous no-till and cover crops, starting on your fields with the best drainage. This combination of no-till and cover crops reduces soil erosion and losses of sediment bound P, as well as improving water infiltration, water holding capacity of the soil, and overall soil health.
- Soil test regularly and apply P fertilizer accordingly. **WORKING WITH A 4R CERTIFIED RETAILER ENSURES THAT FERTILIZER WILL BE RECOMMENDED AND APPLIED ACCORDING TO LAND-GRANT UNIVERSITY RESEARCH.**
- Use geo-referenced soil testing (grids, yield zones, soil types, etc) and apply with variable rate technology. This ensures that all areas of the field receive only what is needed.

- Identify those fields in your operation that are most at risk of elevated P losses. Work with us at Sunrise Cooperative or with your local SWCD to identify these fields (or areas of fields). Some of the characteristics of elevated P loss fields are:
 1. Very high soil P levels, especially if over 100 ppm
 2. Adjacent to a stream or road ditch, where surface water flows directly into the stream or ditch
 3. Tile inlet structures or French drains
 4. Fields with defined areas of concentrated surface water flow and no grass waterway is present. This could be an eroded swale, a washout, or a gully.
 5. Highly compacted fields
 6. Fields where both primary and secondary tillage is performed in the fall, often called "stale seedbed".

All of us at Sunrise Cooperative are committed to helping you protect your phosphorus fertilizer investment. Let us have a conversation soon about what that might look like for your operation!