

Let's Incorporate Nutrient Management Planning Into Our Service-based Structure

Our goal should be to do so through mechanisms that make it a profitable and sustainable endeavor for the landowner, crop producer and fertilizer industry.

***Summary:** State and federal nutrient management planning programs are primarily designed to meet regulatory and incentive-based program needs. For nutrient management planning to become a viable component of the fertilizer industry, our programs need to be developed not only to meet public program requirements, but also to have a much higher level of customer service. There are many reasons why we need to exceed the minimum. Incentive programs tend to be short-term. What will customers do when the public funding feeding trough becomes empty? Most conservation-based nutrient management incentive programs reward landowners whose natural resources are most at risk. Given agency missions of improving and maintaining natural resources, this reward system is logical. From the fertilizer industry's perspective, we tend to work with and target the most progressive and professional land managers. They have often already incorporated highly effective conservation/nutrient management programs into their land resources operation. Therefore, it is only reasonable that our nutrient management efforts be more complete, intense, economically sustainable, and designed to enhance all phases of crop production and animal ag systems.*

Nutrient management planning has received much attention over the past several years. Most interest has been stimulated in response to regulatory or incentive-based state and federal programs. As a result, many groups have positioned themselves to become involved in nutrient management planning.

Nutrient management planning has always been important to the fertilizer industry. It has been incorporated into many corporate mission statements, especially at the regional/retail level. Not only does the industry understand the geological/biological components of nutrient management, but it also has developed the infrastructure required to manage nutrient inventory, transportation and application systems at economical and social levels. Many segments of the fertilizer industry are also involved in animal production, grain and forage marketing, agricultural financing and whole farm consulting. No other group has the combination of technical expertise, physical capabilities, and landowner access/trust as does the current fertilizer manufacturer/supplier system.

Programs/philosophies

Some of the questions often asked are: 1) should the fertilizer industry participate in state and federal crop nutrient management programs? 2) should the fertilizer industry develop services to center around state and

federal crop nutrient-related programs? 3) what role does the fertilizer industry play in the Natural Resources Conservation Service (NRCS) Technical Service Provider (TSP) programs? and 4) how sustainable is it for the fertilizer industry to invest time, resources, and personnel around federal programs that are often politically driven, subsidized through public funding, and subject to continuous change?

I believe it is in the best interest of the fertilizer industry to provide minimum nutrient management planning services to meet regulatory and incentive program requirements. However, we need to exceed those requirements with progressive programming designed to better serve our clientele. Regardless of activity level, the industry must find a way to develop a fair and sustainable fee-based structure for the nutrient management services offered to our clientele.

Code 590 (May 2001) of the Missouri NRCS Conservation Practices Standards and Specifications defines nutrient management as "managing the amount, source, placement, form, and timing of application of nutrients and soil amendments to ensure adequate soil fertility for plant production and to minimize the potential for environmental damage."

Currently (February 2004), MFA Incorporated defines nutrient management planning as "systems level crop, animal, and land-use nutrient manage-

ment designed to ensure the economic, environmental and social sustainability of our land and people resources.” Generally speaking, these two definitions (the Missouri NRCS’s and ours) are similar with slightly greater emphasis placed on economic viability from our organization’s viewpoint.

The primary purposes of nutrient management according to Code 590 are: 1) budget and supply nutrients for plant production, 2) properly use manure or organic byproducts as a plant nutrient source, 3) minimize agricultural non-point source pollution of surface and groundwater resources, and 4) maintain and improve the physical, chemical, and biological condition of the soil.

Minimum requirements

Listed below are minimum requirements for codes as they relate to Missouri. Information in your state may be different. Please check the national NRCS website at www.nrcs.usda.gov for state and local requirements in your area. (*Note: the bold text below is not traditionally managed through our industry.*)

- Aerial site photographs (or field maps) and a soil map .
- Sequence of crops or forage produced on each field.
- Yield goals and soil type and how determined.
- Soil test results and special tests such as **manure, water, plant tissue, or late-season nitrate tests.**
- Budget for NPK used on crop or forage rotation or crop sequence.
- Quantification of all nutrient sources and **losses** that are to be considered in the planning process.
- Recommended rates, methods, and timing of nutrient application, including incorporation.
- Location of sensitive resource areas and associated setback areas, or **additional conservation treatments** where special attention will be required when applying nutrients.

- **Description of size and kind of livestock, including quantity of manure produced during planning period.**
- **Description of waste management systems (production, storage, transfer, handling) including application equipment and labor required to land apply manure.**
- **Scheduling manure application based on maximum nutrient efficiency (to include animal rates, application frequency and timing, time needed to incorporate and quantity of NPK applied).**
- **Calculations used to develop application schedule based on needs of crop rotation, including the nutrient available to crop or forage after application.**

As listed above, many of the requirements for federal program nutrient management planning are already being provided through the fertilizer industry. Components missing from many fertilizer industry-based organizations are the conservation practice and animal production sections. However, many agricultural suppliers and retail dealerships are full spectrum/full service operations that manage animal production systems.

Key considerations

Budgeting has always been a key consideration of the fertilizer industry. When describing nutrient budgeting, at least three components need to be addressed: 1) budget scale: international, national, regional, local and sub-field, 2) budget philosophy: political, geographical, biological, and economic, and 3) budget source: atmospheric, soil, inorganic, organic, fertilizer commodity, animal production waste materials, municipal waste materials or byproducts. The fertilizer industry, through groups such as the Potash and Phosphate Institute (PPI) and Foundation for Agronomic Research (FAR), has done an excellent job of large-scale

(international, national, and regional) nutrient budgeting. Resources such as “Plant Nutrient Use in North American Agriculture—Producing Food and Fiber, Preserving the Environment and Integrating Organic and Inorganic Sources” are valuable resources and documentation of these budgets. They can be found at www.ppi-ppic.org and www.ppi-far.org.

Soil testing. On the local scale, organizations such as MFA Incorporated have always used nutrient tracking and budgeting as mechanisms for servicing our farmer/owner base. Soil testing programs have been the heart of our crop nutrient recommendations for decades. Using MFA soil test data as an example, we can get an idea of the breadth of nutrient inventory programs. There are 20 million acres of row crop, hay and pasture in Missouri. We service approximately 40 percent of these acres. Our agronomic recommendation soil testing goal is a minimum of one soil sample per 20 acres. Ideally, we should be taking/monitoring 400,000 soil samples to service our acreage in Missouri. If a field is sampled every four years, then we should be monitoring approximately 100,000 soil samples annually.

Excluding precision agriculture soil test grid samples, we process 14,000 to 16,000 soil samples annually. This represents one soil sample for every 125 to 140 acres of agriculturally managed land resources that we service. Therefore, we are taking approximately 20 percent of the ideal number of soil samples. When grid sampling/precision agricultural programs are accounted, the number of acres serviced through soil sampling rises to approximately 25 percent. Realistically, this is a fairly high number, but still below our goal. However, we believe that with this volume of soil samples processed, the

mechanism is in place for the fertilizer industry to effectively handle the sampling/crop production recommendation phase of any nutrient management planning program.

Precision agriculture programs have been a key development of the fertilizer industry over the past 15 years. Several million acres of agricultural production currently use some form of precision agriculture. Grid or management zone-based soil sampling and yield monitoring can play an important role in the nutrient management planning process. In most cases, the level of nutrient management provided through precision agriculture far exceeds the minimum

needed to fulfill state and federal nutrient planning program requirements. Not only do precision agriculture programs provide spatially driven nutrient recommendations, as well as application and product recommendations, but many are also designed to record and summarize extremely large data sets. As the industry learns how to interpret these data sets, it is in position to use trend analysis of local, regional, national, and international information to enhance the effectiveness of the nutrient management planning community.

Training. There are many programs

available to the fertilizer industry to help it fulfill formal state and federal nutrient planning needs. In most states, a combination of training programs/forms/computer software and technical support is offered through university extension, NRCS, and private sector efforts. Samples of contacts for more information are www.oznet.ksu.edu/library/crpsl2/pm-47.pdf, www.agry.purdue/mmp, or www.cares.missouri.edu/SNMP.

Dr. Tracy is director of agronomy technical services for MFA Incorporated, Columbia, Missouri. □