



AGRICULTURE'S BALANCING ACT

BY T. SCOTT MURRELL

Ever seen a pond or lake that's green and smells bad? Isn't the water supposed to be clear enough to swim in? After all, what's the point in going to the lake if you and your family can't enjoy it? Turns out the problem may be too much of a good thing...nutrients. Phosphorus is essential for plant and animal health. Fish need some phosphorus in their water to survive. But too much phosphorus in the water is bad for fish and other aquatic life. It's like food. Without it, we starve, but if we binge, we bloat. The key is balance. And right now, our lands and waters have unbalanced levels of phosphorus. We've got too much in some places, and not nearly enough in others.

Progress is being made in better managing application of fertilizers and livestock manures for optimum use in crop production, while protecting water quality. While too much phosphorus is not good in rivers, lakes, and other water bodies, soils in many areas are still low in availability of the nutrient.

How did our lands and waters get into this shape? Well, it didn't happen overnight. We all like food that doesn't cost us an arm or a leg, but we want it to be nutritious...except for an occasional candy bar. Combine this with the fact that most of us had kids. So over time, we placed greater and greater demands on the food supply...more, better, cheaper...and agriculture responded with bigger, fewer, more efficient farming operations. It's the economy of scale. Spread costs of production over more bushels or snouts, and each little pig or ear of corn costs less to produce. So agriculture has seen a lot of consolidation.

Now, one thing hasn't changed, and that is if you put food in one end of an animal you'll get something (waste) out at the opposite end. If you've got a lot of these opposite ends in one place, given the economy of scale, pretty soon you find yourself knee-deep in stuff we pay a high price for at the garden store. So, you need to find some way to get rid of all the waste.



Well, these animals aren't going to hold it in until you've got the barn all nice and clean and then give them the green light. You've got to keep up. So you scrape and shovel it out of the barn. That keeps the barn clean, but now you've got a pile right outside the door that you must do something about. Since the garden store only has so much shelf space, you've got to find another option...put it on the land. Great idea. Manure contains nutrients and plants out there on the land need nutrients. A match made in, well, hog heaven.

Increasing attention to water quality in recent years has resulted in more efforts in crop nutrient management.

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Unfortunately, like most matches, things aren't always as perfect as they first appear. Hauling manure from a pile to the surrounding land is a never-ending job, kind of like taking out the garbage. Plus, you don't want to haul it too far because it takes time and money. So you figure closer is better. Another problem solved.

Except now there's something else wrong. Remember all those nutrients in that manure? Well, plants only need so much. In fact, they need different amounts of each. They took more of the nitrogen, but left a lot of the phosphorus. Now those handy nearby lands have a lot of phosphorus...more than plants need, but the land you farm farther out doesn't. Too much here...too little there. So what are you going to do about the crop nutritional needs of that more distant land?

You already know that if you haul the manure too far, you can't keep up with the pile near the barn, plus it starts getting uneconomical...lots of trips back and forth and you wind up feeding the gas tank more than your kids. Plus, the relative amounts of nutrients in manure aren't well matched to what plants need. If they were, you wouldn't have this problem to begin with. What you want is something economical to haul longer distances plus meet the crop nutrient needs more exactly, to avoid creating a big pile of phosphorus somewhere else. The solution? Commercial fertilizer.


Yes, commercial fertilizer is a modern marvel...little granules of highly concentrated nutrients that can be blended together into just the right mix. You can haul it a long way and still afford to buy candy bars. Great, one more problem solved. Time to go fishing.

As you whistle down the lane, fishing rod in one hand, tackle box in the other, you suddenly remember the problem that started all this...all that green algae in the pond. Now, just having a lot of phosphorus on the land doesn't automatically mean that fish are going to start popping to the surface. For that to happen, phosphorus has to get from the land to the water and there has to be enough phosphorus around to be a problem. So if you've got enriched soil on flat land in a drier area...no real problem. But a gully-washer rain falling on barren land that slopes down to a creek gets the fish worrying about their future.

Phosphorus enters water in many ways, both natural and through human activity. Agriculture is only one of the ways. But we are striving to fix our part of the problem. So, what are we doing? Right now, agricultural scientists, agencies, and industries are finding ways to work together to educate people about what we already know to be some of the best ways of managing nutrients...integrating manure and commercial fertilizer applications to better distribute nutrients in the environment while meeting plant and animal needs. And of course, there are many things we don't know yet about how all this works. For that, we conduct research to help find some practical approaches.



Livestock manure can provide some needed nutrients for crops, but transportation and balancing nutrient levels correctly are challenges.

We have a long way to go, but working together, we are making strides toward cleaning up our part of the water problems. The people in agricultural production want to assure you have access to an inexpensive, reliable, nutritious food supply...even if you sometimes opt for a candy bar. 

Dr. Murrell is PPI Northcentral Regional Director, located at Woodbury, MN; e-mail: smurrell@ppi-far.org.

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Farmers, agricultural scientists, government agencies, industry, and others are working together to achieve efficient crop and livestock production while protecting the environment.

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- Crop Fertilization Improves Soil Quality
- Nutrient Balance: Critical to Crop Production and Environmental Protection
- Nutrient Balance Can be Achieved Using Both Inorganic and Organic Sources
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- Crop Fertilization and Heavy Metal Accumulation in Soils
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