

Lawrence Baker

Larry Baker, Ph.D.
1429 Wellesley Ave.
St. Paul, MN 55055

Comment:

The draft text (section 12.3) says that N is to be applied at the U of M “agronomic rate”. As I understand this language, it means no more than the crop needs to achieve maximum crop potential.

Does this assure that no nitrate will leach through the subsoil and into aquifers? I think that it doesn't (although my knowledge might be a bit dated), and that the regulation needs to be much more stringent.

One way to do this is to require cropped fields to be equipped with one or more infiltrometers designed to collect samples of water infiltrating below the root zone. These samples would then be collected through a tube (vacuum assisted) and then sampled to analyze for nitrate. This methodology is now simple enough that a crop consultant or the the farmer could operate it easily (nitrate analyses are fairly inexpensive). The goal would be to keep average below-root zone nitrate less than 10 mg/L (MCL). A colleague who frequently uses lysimeters concurs that simple lysimeters would be practical.

It is possible that there is enough previous research that MPCA could develop nitrogen application rates needed to keep below-root zone nitrate levels <10 mg/L. If so, these rates should be the basis for the regulation. I don't think the MN Extension application rates reflect this knowledge, but again, I could be wrong.

In any event, we must develop agricultural practices that protect nitrate in regional groundwaters. This has not been true historically, resulting in numerous nitrate-contaminated aquifers.

It is entirely possible that N application rates needed to maximize (or optimize) for corn production would result in nitrate contamination of aquifers in some areas. If so, corn shouldn't be grown, though perhaps other crops could be.

In summary, we've been very lax about preventing nitrate contamination of groundwater, at great cost and inequity (shifting the cost to private well owners and community water systems). We should be moving our nitrate problem upstream, to the source of the problem.