INMC Meeting Notes

May 19, 2021

Members present: Michael Shepherd, David Hardy, David Crouse, Stephanie Kulesza, Luke Gatiboni, Deanna Osmond, Ramesh Ravella, Christine Lawson, Colleen Hudak-Wise, and Jeff Young

Agenda: Discuss USDA-NRCS' letter on "North Carolina (NC) Nutrient Management Discussion" dated May 14, 2021. Below is their letter and the INMC's response.

May 14, 2021

North Carolina Nutrient Management Discussion

Dr. Deanna Osmond
North Carolina Interagency Nutrient Management Committee Chair
Associate Department Head and Department Extension Leader
Soil Fertility and Watershed Management
2229 Williams Hall
North Carolina State University
Raleigh, NC 27695

Dr. Osmond:

I want to thank you and Mr. Shepherd for the time you took to demonstrate for us the North Carolina Nutrient Management Planning software. During our discussion, there were several items that were mentioned concerning the Natural Resources Conservation Service (NRCS) and nutrient management. This letter is in response to your request to document some of the potential issues related to nutrient management between NRCS and the North Carolina Interagency Nutrient Management Committee. The items of concern were based on information found in the 2019 version of the Nutrient Management Conservation Practice Standard and the NRCS Comprehensive Nutrient Management Plan policy. During our discussion, the following items were identified:

- Requirements to following NRCS Nutrient Management Conservation Practice Standard (590)
- Need to calculate soil loss on an annual basis for fields receiving manure
- Soil tests are to be no older than two years
- Manure tests requirements at least annually or more frequently to account for operational changes
- Use of Manure Management Planner for developing Comprehensive Nutrient Management Plans (CNMP)
- Compatibility issues on NRCS computers with the North Carolina Nutrient Management Planning software

Following is an explanation of each of these items:

Comprehensive Nutrient Management Plan (CNMP): If the operator of an animal feeding operation seeks technical or financial assistance from NRCS to address manure or wastewater handling and storage, treatment, and nutrient management involving the application of manure and wastewater, a CNMP is to be prepared. A CNMP is a component plan of a conservation plan in which its development follows the NRCS planning process. Even though a conservation plan may have some elements that could be used in a permit application, that is not the purpose of a CNMP. From the NRCS perspective, obtaining a permit is the sole responsibility of the landowner and not NRCS. An NRCS CNMP is made up of three main sections (farmstead area, land treatment area, and nutrient management plan) and a signature page. The policy for developing a CNMP, required components and format is found in the NRCS General Manual Title 190, Section 405 (October 2015).

Nutrient Management Plan: A major portion of a CNMP is the nutrient management plan (as mentioned above). If nutrient management (NRCS conservation practice standard 590, Nutrient Management) is part of a conservation plan, then the components of that standard are to be followed. The current national version of the Nutrient Management standard is dated May 2019. North Carolina is currently using a 2014 version. They will soon be moving to the more current version. States that adopt a national practice standard can make some additions to the standard as long as they are at least as restrictive as the national version.

Soil Testing: Soil tests must be no older than two years when developing new nutrient management plans. Nutrient management revisions and maintenance can use soil tests meeting the intervals recommended by the Land Grant University (North Carolina State in this case). According to the NC State Extension Publication – Careful Soil Sampling-The Key to Reliable Soil Test Information, soil tests in the Coastal Plain region should be tested every two to three years, and in the Piedmont and Mountain regions every four years. The North Carolina Environmental Management Commission Department of Environmental Quality – Swine Waste Management System General Permit states that "a representative Standard Soil Fertility Analysis, including pH, phosphorus, copper, and zinc, shall be conducted at least once every three (3) years on each application field receiving animal waste." NRCS would follow the appropriate criteria for soil testing to meet the Nutrient Management (590) requirements.

Manure Testing: According to the current national NRCS 590 Nutrient Management standard for manure testing and analysis – "Collect, prepare, store, and ship all manure, organic by-products, and biosolids following Land Grant University guidance or industry practice when recognized by the Land Grant University. In the absence of such guidance, test at least annually, or more frequently if needed to account for operational changes (e.g., feed management, animal type, manure handling strategy, etc.) impacting manure nutrient concentrations." Based on NC State Extension publication – Swine Manure as a Fertilizer Source, it states that "The average nutrient values for different swine manure systems are found on the Nutrient Management in North Carolina website. These values can be used as planning guidelines but should never be used for determining actual applications to receiving crops." Based on this, an NRCS developed CNMP would need to have a manure test and would be recommended on an annual basis as a minimum.

Soil Erosion: According to NRCS National Instruction Nutrient Management Policy Implementation, "when manure or organic by-products are applied, the erosion component of the P-Index must be based on the annual soil-loss rate for the year in which the manure is applied." Annual soil-loss rates are automatically calculated by the Revised Universal Soil Loss Equation version 2 (RUSLE2). This feature is incorporated into the Manure Management Planner software.

Phosphorus Index: A state phosphorus index (PI) must consider as a minimum: soil test phosphorus; time, rate and method of phosphorus application; erosion; runoff; and leaching. States must also establish an upper limit of soil test phosphorus above which manure must not be applied regardless of PI results. Planners must use NRCS nationally approved P risk assessment technology. The application of phosphorus must be in accordance with a nutrient plan based on an NRCS national and State-approved phosphorus loss risk assessment (P-Index) or Nutrient Tracking Tool (NTT) (when available). All NRCS PI tools must be calibrated using NTT or other suitable NRCS approved tool to standardize the P-loss categories. (This information was taken from NRCS National Instruction Title 190, Part 313 – Nutrient Management Policy Implementation, February 2017.)

Manure Management Planner (MMP): Manure Management Planner (MMP) is the only NRCS nationally supported software used to develop nutrient management plans (NMP) and comprehensive nutrient management plans (CNMP). Planners are strongly encouraged to utilize MMP to streamline the CNMP development process and improve the quality of CNMP output documents. This software has been certified to be used on NRCS computers. When changes are made to the software, it will be recertified for NRCS use. The MMP document function creates a CNMP that meets the NRCS format and policy requirements. States also have the ability to generate state templates to meet states requirements. At this time 46 of the 48 continental states have incorporated information into MMP to meet state requirements (i.e. cropping data and phosphorus index). Discussions are beginning with one of the two remaining states to begin adding state criteria to MMP. North Carolina will be the last of the continental states to incorporate state information into MMP.

There are a few options for potentially addressing the differences between NRCS and North Carolina nutrient management criteria:

1. The North Carolina Interagency Nutrient Management Committee could adjust state criteria to meet the criteria outlined for NRCS nutrient management evaluation and implementation.
2. North Carolina NRCS would have to request a variance from National Headquarters to meet the North Carolina Interagency Nutrient Management Committee criteria. There is no guarantee that this request will be granted. A new variance request would have to be made for each new NRCS Nutrient Management conservation practice standard update.
3. The state would have to operate with two different nutrient management criteria, one for the state and one for NRCS.

For nutrient management planning software, there are also a few options available for collaboration between NRCS and the North Carolina Interagency Nutrient Management Committee:

1. North Carolina Interagency Nutrient Management Committee planning criteria and necessary components of the NC Certified Animal Waste Management Plan can be incorporated into MMP to allow for NRCS, Technical Service Providers and the State to have consistency across the state. This would also give NRCS the ability to perform the North Carolina nutrient planning process on NRCS computers.
2. NRCS could generate the required CNMP formatted documents to include the farmstead and land treatment areas through MMP or other approved method and rely on sources outside of the NRCS computer network to develop the nutrient management portion of the plan utilizing the North Carolina Nutrient Management Planning program. North Carolina NRCS would have to request a variance from National Headquarters to meet the North Carolina Interagency Nutrient Management planning criteria.
3. Maintain two different CNMP and NMP systems, one for NRCS and one for the state. Knowing that there may be differences between state permit and NRCS CNMP requirements, results may not be consistent between the two systems.

Again, I want to thank you for the opportunity to talk about the nutrient management issues and concerns in North Carolina. I would be happy to discuss any of these items further if you like.

Sincerely,

Jeff Porter

Jeff Porter
USDA-NRCS
Animal Manure and Nutrient Management Team

Cc: Rafael Vega, NRCS State Resource Conservationist, Raleigh, NC
Josh Spencer, NRCS Water Quality Specialist, Raleigh, NC
Tim Pilkowski, NRCS National Nutrient Management Specialist, Washington D.C.
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NC STATE UNIVERSITY

June 7, 2021

Mr. Jeffrey Porter
USDA-NRCS
East National Technology Support Center
Manure Management Team Leader
Greensboro, NC

Dear Mr. Porter:

The NC Interagency Nutrient Management Committee (INMC) met on May 19, 2021 to discuss your letter on "North Carolina (NC) Nutrient Management Discussion" dated May 14, 2021. Your letter was shared with the INMC so we could go through your points and discuss them relative to nutrient management planning in North Carolina. This letter describes nutrient management in North Carolina, the role of the INMC, responses to your points, and a path forward.

North Carolina has a well-established regulatory process for animal waste management systems that began in 1993 with the Waste Non-Discharge rules, and today includes numerous relevant laws implemented through general statute and through administrative code via the rule making authority of the NC Environmental Management Commission (EMC). In North Carolina, providing animal waste management guidance and technical assistance support includes many partnering agencies that each bring their own agency's focus to the table. The result is a technical advisory group whose strength is greater than the sum of the individuals, the INMC (https://nutrientmanagement.wordpress.ncsu.edu/).

The INMC is composed of personnel from the NC Department of Environmental Quality, North Carolina Department of Agriculture and Consumer Services, NC State University, and USDA Natural Resources Conservation Service (NRCS). This group was formed by the NRCS State Conservationist in 2002 with the following charging memo:

https://nutrientmanagement.wordpress.ncsu.edu/files/2019/01/INMC-Charge.pdf

The committee was necessary due to the rapid expansion of the pork industry and the evolving state standards regulating liquid waste systems. Since that time, all technical decisions related to nutrient management have been made as a team through consensus. A separate committee, the Senate Bill 1217 Interagency Group, provides a unified voice with regards to the implementation of these technical decisions provided by the INMC.

Waste management systems that serve swine, horse, sheep, cattle (in confinement) and poultry operations with a liquid waste system must meet state regulatory requirements, which include nutrient management, setbacks, and storage. Requirements for poultry farms with dry litter specify a nitrogen-based plan. Implementation of nutrient management in North Carolina includes far more than NRCS Technical Standards. Some of our regulations are codified in general statutes approved by the legislature and signed into law by the governor. Other regulations are written into

water quality rules approved by the EMC and the NC Rules Review Commission. There are approximately 2,300 animal feeding operations with liquid waste management systems subject to state non-discharge permitting requirements, and approximately another 20 facilities are subject to the permitting under the Federal CAFO Rule. All other animal operations are considered "deemed permitted" as noted in Permitted by Regulation (15A NCAC 02T .1303).

Nutrient management plans written in compliance with NC General Statute and NC Administrative Code as components of the permitted Certified Animal Waste Management Plan (CAWMP) must be signed by a Technical Specialist designated by the NC Soil & Water Conservation Commission. Even USDA-NRCS plan writers must be designated by the NC Soil & Water Conservation Commission to write plans accepted by the NC Department of Environmental Quality for permit compliance. There are currently 419 designated technical specialists in NC, of which 76 are USDA-NRCS employees. **However, only 26 of those USDA-NRCS employees are actively engaged in maintaining their designations**. Because of the requirements of state laws and regulations, which are consistent with, and often exceed the requirement of NRCS Technical Standard 590, few nutrient management plans are written by USDA-NRCS unless Farm Bill program financial assistance is involved for implementing animal waste storage/management and mortality management practices.

Below is the discussion of your concerns and our responses.

1. *Requirements to following NRCS Nutrient Management Conservation Practice Standard (590)*: Having discussions with different individuals, we believe we can meet this through a strategy used in other states, such as Delaware. We would develop a state CNMP template based on Manure Management Planner (MMP) and then integrate it into the North Carolina Nutrient Management Software, which includes the NC Phosphorus Index tool.

2. *Need to calculate soil loss on an annual basis for fields receiving manure:* The requirement for annual soil loss assessments for all crops in the land application interval in the nutrient management plan can be made clearer in an updated USDA-NRCS NC 590 Nutrient Management standard, projected to be completed over the next few months.

3. *Soil tests are to be no older than two years:* NC General Statute 143-215.10(e)(6) requires a soil test at least once every three years for manured fields. An updated USDA-NRCS NC 590 Nutrient Management Standard can address a two year soil test life in instances of NRCS initiated and requested plan development, but this will be more restrictive than the intent set forth by the legislative branch of NC government. It is anticipated there will be resistance from the legislature as they specifically changed a prior law in 2013 to extend the soil sampling window from one to three years. (See NC Session Law 2013-228.) However, planners can accommodate the two-year criteria for soil tests without a legislative change.

4. *Manure tests requirements at least annually or more frequently to account for operational changes*: North Carolina law currently requires a manure test within 60 days of land application, see NC General Statute 143-215.10C(e)(6). The individual sample is used for tracking applications made to fields when calculating the annual nutrient balance for each field.

The well-established practice in NC for developing nutrient plans is based on on-farm averages where they exist, or state averages when necessary. For plan development purposes, not nutrient tracking during plan implementation, averages are a far better approach than a single sample that is subject to sampling error or dilution due to high rainfall. This more conservative approach to nutrient planning coupled with active waste sampling and recordkeeping provides a greater level of environmental protection.

With regards to the on-farm balance, we would be interested in knowing how NRCS estimates annual manure volume generated on facilities. The manure nutrient mass balance is a function of nutrient concentration (e.g., pounds per gallon) times the total amount (gallons) produced per unit of time. A manure sample alone results in incomplete information that cannot be used for a total farm balance.

5. *Use of Manure Management Planner for developing Comprehensive Nutrient Management Plans (CNMP):* As described in Item 1, we believe that there is a solution for opting to not use MMP. The North Carolina Nutrient Management Planning Software is very sophisticated and easy to use. Additionally, staff are in place to conduct regular trainings and provide technical support.

   We also have concerns about yields used in MMP. The NC Nutrient Management Software is built around the published NC Realistic Yield Database (https://realisticyields.ces.ncsu.edu/), which establishes an expected yield for more than 30 crops on more than 5,000 soil map units in diverse geographies of NC. This database undergoes periodic review by the INMC and incorporates updates based on the latest information coming from the land grant universities in North Carolina.

6. *Compatibility issues on NRCS computers with the North Carolina Nutrient Management Planning software:* The NC Nutrient Management Planning Software is fully compatible with NRCS computers. Functionality issues have been an acknowledged hurdle on NRCS computers due to USDA IT procedures and processes that require the auto update feature of the software to be disabled -- thus facilitating a separate, “partial” USDA approved version of the software to be installed on NRCS computers. The initial bugs that caused increased error messages and software version releases have been sorted out. The software version updates are occurring less often which should allow for less disruptions waiting on USDA network approval and IT personnel installations. Where issues with functionality on USDA networked computers are occurring, the NC conservation partnership and INMC will continue to collaborate to find solutions. If there was an NRCS procedural methodology or waiver to allow the NC Nutrient Management software to maintain its full integrity on NRCS computer installations, functionality issues would likely disappear and, in addition, NRCS would have full use of a software product that is supported by NCDA programmers and specialists.

7. *Soil Erosion and Phosphorus Index:* Under NC statute and regulations, nutrient management plans for animal operations under state permits are exempt from

USDA-NRCS phosphorus regulation, so state plans do not need either of these components. See 15A NCAC 02T .1304(b)(1). For plans being written due to NRCS financial assistance policy requirements or for those operations subject to NPDES permits under 40 CFR 122.23, North Carolina's phosphorus index tool (PLAT) meets all the criteria stated in the USDA-NRCS 590 Standard and applicable NRCS national instructions with the process and standard updates to be completed. Rather than being an index tool, it is a process-based model and likely one of the three most complex and accurate indexing tools in the country. Finally, in the updated NC 590 Standard, we will set an upper-level soil test phosphorus level.

Your group suggested options for addressing the differences between NRCS and North Carolina nutrient management criteria:

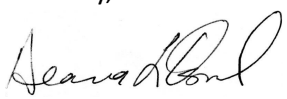
1. *The State of North Carolina could adjust state criteria to meet the criteria outlined for NRCS nutrient management evaluation and implementation*. Since most planning in North Carolina is done by technical specialists to meet state standards and not USDA-NRCS employees, it does not make sense for North Carolina to adjust their nutrient management rules to meet NRCS criteria, especially since most of the changes can be readily made via adoption of the CNMP template model and forthcoming updates to the NC 590 standard.

2. *North Carolina NRCS would have to request a variance from National Headquarters to meet the State of North Carolina nutrient management criteria for use of standardized manure nutrient values in plan development. There is no guarantee that this request will be granted. A new variance request would have to be made for each new NRCS Nutrient Management conservation practice standard update*. We see this as the best path forward to preserve the relationship between the NC INMC and USDA-NRCS, and plan to work to submit that request soon.

3. *The State of North Carolina would have to operate with two different nutrient management criteria, one for the state and one for NRCS*. This suggestion goes against a partnership that has been in place and operated successfully for decades and would be of great concern to state agencies.

Based on your concerns, we believe we can meet the national standard in our updated USDA-NRCS NC 590 standard. As to the MMP software issue, we believe that the use of a CNMP template will resolve the issue; we will meet the USDA-NRCS CNMP while maintaining our state-level nutrient management tools. This will preserve and maintain the strong and historic working relationship between the INMC and NC NRCS.

Sincerely,



Deanna Osmond, PhD
Professor and NC Interagency Nutrient Management Committee Chair

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