NORTH CAROLINA INTERAGENCY NUTRIENT MANAGEMENT COMMITTEE

Agency Partners:
North Carolina Cooperative Extension Service (NC CES) and North Carolina State University – Soil Science Dept.
North Carolina Department of Environment & Natural Resources –Division of Water Resources
North Carolina Department of Agriculture and Consumer Services – Agronomic Division
North Carolina Department of Agriculture and Consumer Services—Environmental Programs Division
North Carolina Department of Agriculture and Consumer Services—Division of Soil & Water Conservation
United States Department of Agriculture - Natural Resources Conservation Service

Date: September 20, 2013

Fact Sheet: Revision of North Carolina Waste Data Tables for Use in Waste Management Planning

Background

Beginning in 2010, the North Carolina Interagency Nutrient Management Committee (NC INMC), coordinated a review extensive multi-year NCDA sample-based waste analysis data, as well as collected on-farm waste generation and volume information. This information was compiled and presented to the NC INMC by Karl Shaffer (retired, NCSU) to provide a data-based foundation for group decisions on a revision of the 1993 waste data tables. In addition to a redefinition of waste nutrient content values for revised tables based on statistically analyzed NCDA sample data, an objective of the group was to revise waste generation volumes based on collected, sufficient on farm data. After agreement on revised waste nutrient content values, the group instructed Shaffer to utilize the compiled, analyzed data set for swine to develop new waste volume generation recommendations. In 2012, the NCSU Bio and Ag Engineering Department assisted the group in further analysis of historic and current swine waste volume information and calculation procedure to determine appropriate swine waste volumes to include in the revised tables.

A key INMC goal for this effort is to ensure process integrity through documentation of science-based methodology used to guide group consensus and 'approval' of information included in the new tables.

The final data analysis, summary, and recommendations are available on the Nutrient Management in NC website.

General Table Revisions and Coordination with NCDA&CS Agronomic Lab

- The past tables were incorporated in the NRCS 633 Waste Utilization standard. Due to revision of the NRCS 633 standard, and INMC consensus, the new tables will now be housed on the Nutrient Management in NC website.
- A new Wean to Finish swine production phase category has been added to the new tables.
- Comparative analysis of NCDA sample drying methods found no statistical relevant variations of nitrogen concentration values for swine or poultry waste samples among various drying methods.
- The waste sample categories were consolidated where data showed statistical similarities among production phases and/or the 'old' category was obsolete.
- The new categories have been integrated into NCDA sample submission and analysis protocol as of July 2012. See the NCDA waste sample information form at: http://www.ncagr.gov/agronomi/pdffiles/iswaste.pdf for additional information and to view the current waste categories.

Animal Waste Nutrient Concentrations

More than 85,000 waste analyses collected from 2005-2009 were statistically analyzed in order to make final revision recommendations. In general, the N:P ratio for swine lagoon liquid is approximately 2:1, and for poultry waste, the N:P ratio is closer to 1:1.

Swine:

- Nutrient data for irrigated swine waste show that feed additives to reduce waste phosphorus content have been effective
- The new values for Swine Lagoon Liquid are 3.6 lbs Total Nitrogen per 1000 gallons for all production phases except Farrow to Wean, which will be 2.4 lbs Total N per 1000 gallons. The previous Total N value for swine lagoon liquid was 5.0 lbs per 1000 gallons for all production phases but Farrow to Feeder and Farrow to Wean, both 3.4.

Poultry:

- Analysis of collected poultry waste samples problematic due to unknown sample variables
- Very little difference in nutrient content in samples of stockpiled and whole house poultry litter, therefore the stockpile value decreased for broilers and breeders
- In all production phases, Total Phosphorus is lower than in the previous values, in some cases, significantly lower.

Plant Availability Coefficients (PACs)

- For nitrogen, PACs have been adjusted to be a consistent 0.5 for irrigated waste and 0.6 for injected/incorporated application methods.
- For phosphorus and potassium have been changed to a value of 1, resulting in 100% estimated crop nutrient availability. Therefore, the Plant Available P_2O_5 is equal to Total P_2O_5.
- Because PLAT "Source" data input is based on Total Phosphorus, the new 1.0 P_2O_5 Plant Availability Coefficient will not increase PLAT risk ratings.

Manure Volume and Weight

- For all intents and purposes, waste volumes remain the same as in current data tables for all livestock types due to insufficient data being available for revision. NCSU BAE worked with the INMC to further analyze and discuss available information on swine volumes to include in the new tables. This report is available on the Nutrient Management in NC website.
- The use of table Poultry waste generation values remains challenging in waste storage structure design due to introduction of new production phases, different growth intervals and bird weights, and clean out times. The INMC was unable to compile sufficient data for revision of current information.

Planning

- Plan modifications using the new tables should be carefully considered by producers and Technical Specialists, as:
    - The new table nutrient values could trigger 'major modification' plan revision requirements for NC DWR permitted facilities; and
    - Facility-specific waste sample nutrient values may be higher than the new waste tables 'mean' nutrient values.
- Further information on use of the new tables will be forthcoming in future 1217 Interagency Group guidance.