

THE FUTURE ROLE OF USDA NRCS IN NUTRIENT MANAGEMENT

J. L. Lemunyon
USDA NRCS, Fort Worth, TX
lemunyon@flash.net (817) 509-3216

ABSTRACT

Since 1999 USDA Natural Resources Conservation Service has integrated nutrient management planning into the producer's over-all conservation plan. A nutrient management plan contains the guidance for nutrient rate, form, timing, and method of application. Each action is based on specific local climate, soil, crop, and management conditions. The intent is to improve water quality, as well as soil, plant, air, and animal quality conditions, both on and off the producer's land. Major nutrient management planning efforts have started with livestock producers during the development of the comprehensive nutrient management plan, a system of conservation practices and management actions that are implemented to reduce undesirable impacts on those operations that are utilizing livestock manure and other agricultural waste products to provide nutrients to crops for food, fiber, and forage production. Nearly 260,000 livestock operations are identified in the USA for nutrient management plan.

INTRODUCTION

Nearly 260,000 livestock operations and potentially 1.3 billion acres of privately owned cropland, pastureland, rangeland, and forestland in the USA could require a nutrient management plan over the next five years. (See Figure 1.) In part, the necessity for planning stems from USDA, EPA, and state agency regulations for water quality concerns and eligibility of cost share and incentive payments. USDA has established conservation guidelines for developing nutrient management plans. These guidelines require that conservation plans with the nutrient management component contain nine essential elements. These nine components are:

- Maps, including plan maps, soils, topography, and water features
- Identification of environmentally sensitive areas
- Crop rotation or sequence
- Crop yields
- Results of sample analyses, including soil, manure, water, and plants
- Quantification of all nutrient sources on and brought to the farm
- Field by field nutrient budget
- Interpretation leading to the desired rate, form, timing and method of application
- A comprehensive list operation and maintenance necessary to implement the plan

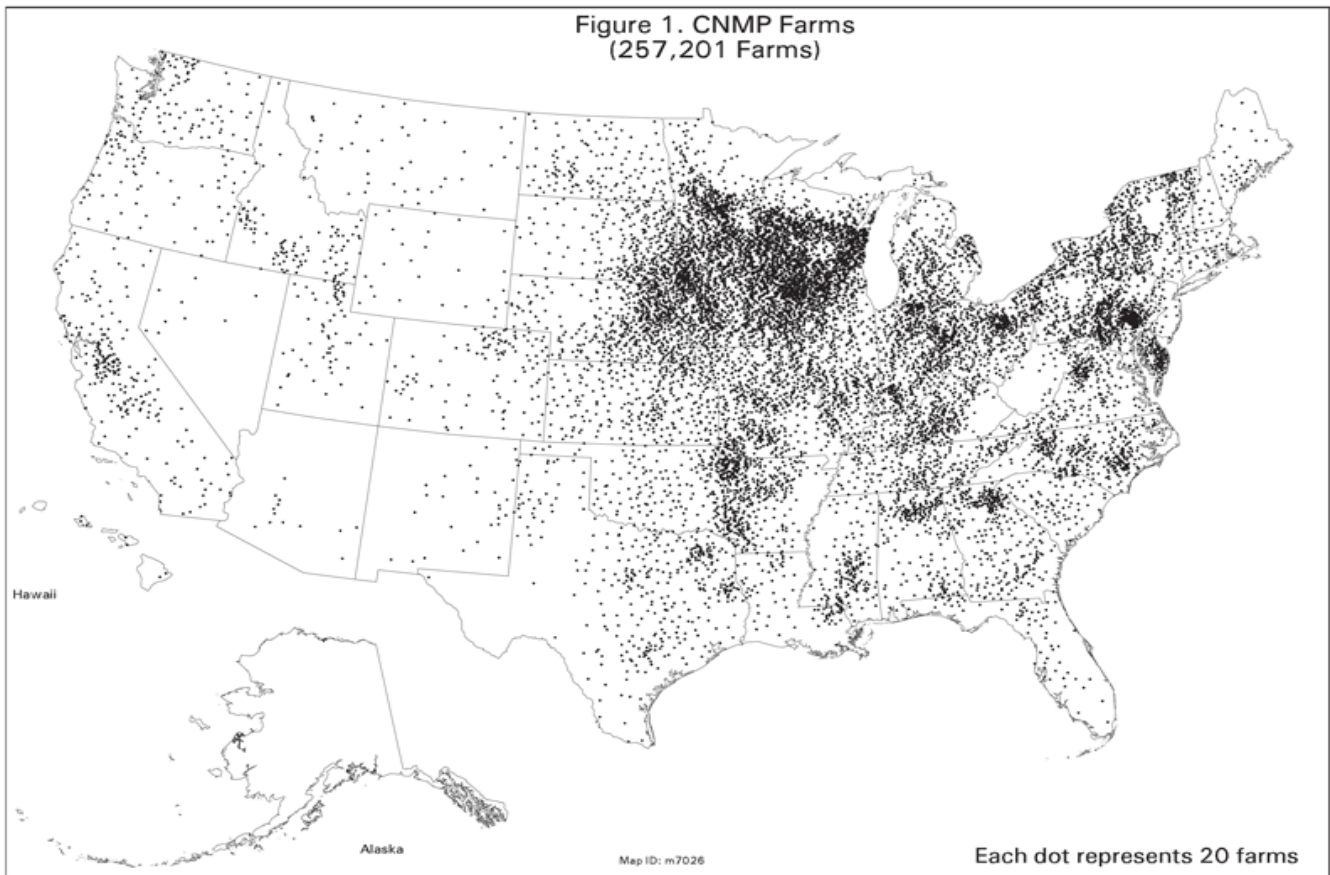


Figure 1. Livestock operations potentially needing nutrient management plans (257,201 in USA).

IMPLICATION FOR PRODUCERS

Livestock operations have traditionally concentrated their management efforts on the livestock and not the associated cropland. As livestock operations grow larger, less and less management time has been spent on crop production. In some operations nearly 100% of the feedstock is imported to the farm with scant land area available for utilization or disposal of the animal manures. Producers now realize the importance of manure application timing and have developed new crop rotations to facilitate year-around windows of opportunities for application and efficient utilization of manure material. An educational and technology transfer effort is needed to acquaint livestock producers with the value and necessity of soil, manure, plant, and water testing as well as mobilizing technical service providers to provide technical assistance in sampling, analyses and interpretation, planning, and implementation of specific nutrient management operations. Up to 40 hours average time is estimated for development and implementation of the nutrient component of the CNMP. More than twice as much time, up to 80 hours, is also required for design and construction of waste handling and storage and land treatment.

IMPLICATIONS FOR INDUSTRY

Nearly 52 million acres of newly planned and tested land can potentially come into the planning mode from all types of land use where nutrients are applied. Traditionally livestock

farmers and other operators have not performed soil and plant testing on their holdings. Soil analyses are more prevalent on cash crop land. A new industry of soil sampling, soil and manure testing, and conservation planning will be needed to comply with the criteria for USDA comprehensive nutrient management planning and EPA concentrated feeding operation permits. An estimate of an additional 11.6 million acres of new land will be required just to properly utilize the nutrients from large livestock operations. This number includes land area not currently being utilized by livestock producers for manure application and land associated with neighboring farm operations that are willing to accept manure from large livestock operations. The number of soil samples is expected to increase as well as large increases in manure and other waste product testing. Two proficiency-testing programs have strengthened their programs to meet these challenges. The North American Proficiency Testing (NAPT) and the Manure Analysis Proficiency (MAP) are both offering services to maintain quality and reliable laboratory analysis services.

IMPLICATION FOR LAND GRANT UNIVERISTY

Land grant universities have had to play catch up. It has been years since many land grant universities have made concentrated efforts on crop response curves for soil fertility. Most of the work was accomplished in the 70s and 80s using commercial fertilizer. The advent of large animal operations and ample manure applications has added a new segment to soil fertility work. There has been a paucity of information on impact of high manure application rates and high soil test levels due to excess manure nutrient applications. This information is needed for both the agronomic as well as the environmental ramifications. Manure applications are moving toward other crops in the rotation that traditionally have not received waste products. New response curves are needed along with new guidance on nitrogen and phosphorus management thresholds and efficiency implications with manure applications.

SUMMARY

An increased task of soil, nutrient and plant management has been initiated by USDA and EPA policies dealing with livestock operations and water quality concerns. All aspects of agriculture – the producer, industry, government agencies, and the land grant universities are being affected. It will require all entities to work along the task in development of nutrient management plans based on local scientific guidance.

REFERENCES

USDA NRCS. 2003. Cost associated with development and implementation of comprehensive nutrient management plans. <www.nrcs.usda.gov/technical/land/pubs/cnamp1.html>

USDA NRCS. 2004. Electronic Field Office Technical Guide. <www.nrcs.usda.gov/technical/efotg.html>

US EPA. 2002. Concentrated Animal Feeding Operations Rule. <cfpubs2.epa.gov/npdes/afo/cafofinalrule.cfm>