



Nutrient Management Plan (NMP)

For:

Name: Joe Farmer

Address: 123 Farm Lane
Farm Town, NJ 12345

Phone: (856) 123-4567

Tracts: 987

I certify that I have reviewed this NMP for technical adequacy:

Signature _____ Date _____
Certified Conservation Planner

Signature _____ Date _____
Certified Nutrient Management Specialist

Owner/Operator: As the owner/operator of this NMP, I certify that I, as the decision maker, have been involved in the planning process. I understand that I am responsible for keeping all the necessary records associated with the implementation of this NMP. It is my intent to implement/accomplish this NMP in a timely manner as described in this plan.

Signature _____ Date _____

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NMP Emergency Response

911 Address: 123 Farm Lane, Farm Town, NJ 12345

Emergency Contacts:

Fire, Police, Medical Emergency: **call 911**

Spill Reporting:

Contact the NJ DEP Bureau of Emergency Response immediately at **1-877-927-6337**. Depending on the severity of the spill, DEP will assist with the

clean-up or contact the appropriate state and local officials.

County Health Department:

(856) 987-6543 ext 2

Introduction to the Nutrient Management Plan (NMP)

NMP purpose and conditions

Nutrient management and waste utilization means managing the source, rate, form, timing, placement, and utilization of manure, rather than disposing of it as a waste residual. The goal is to effectively and efficiently use nutrient resources derived from animal waste to adequately supply soils and plants to produce food, forage, fiber, and cover while minimizing environmental impacts.

The NMP is a component of the Resource Management System for the farm. It is used in conjunction with crop rotations, residue management, pest management, conservation buffers, and other practices needed on a site-specific basis.

Nitrogen and phosphorous issues with water quality

Nitrogen and phosphorous are the two nutrients that are managed in order to protect surface and ground water quality. Nitrogen leaching out of the root zone can enter subsurface drains and be transported directly to surface waters or leach to ground water. Nitrate above 10 parts per million (ppm) in water is a health risk. Concentrations above this level can cause fatality in infants and cattle abortion. Excess nitrogen in the form of ammonia can kill salmonid fish species.

Phosphorous entering surface waters leads to accelerated weed and algae growth causing depressed oxygen levels in the water that impairs aquatic life and can cause odors or bad taste. Excess algae growth has also been associated with toxic dinoflagellates, such as physteria. The NMP is designed to minimize the transport of nitrogen and phosphorous to surface waters.

Goals & Objectives for this NMP

1. The beneficial utilization of manure and associated nutrients
2. Nutrient management for the cropland
3. Control of manure runoff from cropland fields
4. Control of soil erosion
5. Pest management (weeds, insects, disease) related to crop production

Regulatory Conditions

The following New Jersey and local regulations apply to this NMP:

There are no known local regulations. Operating under this NMP should protect you from public pressure under NJ SADC guidelines.

Overview of Cropping System

Tract 987 consists of 6 fields totaling 54.5 acres of cropland. The cropping system on this tract consists of 5-6 years of alfalfa or grass hay, followed by a corn, wheat, soybean rotation. The corn and soybeans are harvested for grain, while the wheat is harvested for both grain and straw.

The table below shows yield records from 1994-2003, and a yield goal of 10% higher for better management and varieties.

Crop	Record Years	Average	Yield Goal
Double Crop Soybeans	1994-2003	28.0 bu/ac	31 bu/ac
Corn	2000-2003	166.0 bu/ac	182 bu/ac
Alfalfa/Orchardgrass Mix	1997-2003	5.1 t/ac	5.6 t/ac
Alfalfa	1997-1999, 2003	4.7 t/ac	5.1 t/ac
Timothy	1997, 2000-2003	4.1 t/ac	4.5 t/ac
Bromegrass (establishment year)	2003	1.7 t/ac	*

*There are no records of bromegrass production on this farm. Timothy is a similar grass hay species, and as such, the yield goal for Bromegrass will be 4.5 t/ac until further records show a different yield goal is necessary.

Tillage

Most field preparation tillage is done using a chisel plow, followed by tandem disk. Occasionally, the tillage routine is varied by using a moldboard plow, or a no-till planter.

Nutrient Management

Nutrient Management Summary spreadsheet is attached, with recommendations based on soil tests and yield goals.

Description of Soil Tests

Current soil tests from March of 2003 show that the levels of P₂O₅ are very high in all fields. All hay fields (grass & alfalfa) will receive no phosphorus applications, as soil tests do not call for additional nutrients. Grain fields can receive up to 20 lbs of P₂O₅ as a starter, but no additional phosphorus will be applied. See soil test recommendations.

Nutrient Management Plan Details

The nutrient management plan is based on nitrogen and phosphorous, since these two can have negative environmental impacts (pg. 4). Potassium, the other major nutrient in crop growth, is not known to pose environmental hazards at this time.

Phosphorous Index

The Phosphorous Index is designed to assess the risk of offsite movement of phosphorous, which causes water quality problems (pg. 3). This farm is required to have the P Index calculated, as the watershed is P impaired based on NJ DEP records of local surface waters. All phosphorus applications are based on soil test levels or the P index, whichever is lower. Full results are contained in the Phosphorous Index (PI) spreadsheet, plan file.

Fields H1, H2, H3 & H4 all had a PI ranking of **MEDIUM**.

This ranking means that nutrient application may be based on **nitrogen** needs of the crop. However, in order to maintain proper soil phosphorous levels, the manure management goal should be to supply a **maximum of 1.5 times the crop phosphorous removal**.

Fields H5 & H6 had a PI ranking of **HIGH**.

This means that all of the fields should have nutrient management done on a **phosphorus basis**, with manure applied to meet the crop uptake of P or soil test P recommendation.

Leaching Index:

The Leaching Index (LI) is designed to assess the risk of soluble nutrients (primarily nitrate nitrogen) moving below the root zone into ground water. The Leaching Index worksheet, which evaluates soil and site limitations, is included in the NMP.

Summary:

Fields 2 & 6 had a LI ranking of M (Medium).

An overall risk of M **may** contribute soluble nutrients below the rootzone under normal management. Site conditions combined with practices pose a medium risk. Nutrient management practices should be implemented to reduce risk.

Fields 1, 3, 4 & 5 had a LI ranking of H (High).

An overall risk of H is **likely** to contribute soluble nutrients below the rootzone under normal management. Site conditions combined with practices pose a high leaching risk. Soluble nutrient applications should be practiced with extreme limitations.

Considerations for limiting leaching potential include:

- ✍ Use of early fall planted cover crops whenever possible
- ✍ Split applications of nitrogen to provide nutrients at times of maximum utilization
- ✍ Avoid nitrate nitrogen sources
- ✍ Consider nitrification inhibitors (especially for ammonium forming fertilizers)
- ✍ Avoid winter nutrient application for spring seeded crops
- ✍ Band applications of phosphorous near the seed row where applicable
- ✍ Apply nutrient materials uniformly (may include use of precision agricultural techniques)
- ✍ Immediate incorporation of manures or organic by-products
- ✍ Consider weather and immediate (24 hour) precipitation forecasts

Residual nutrients:

There may be existing nitrogen residuals from legume crops. According to the Penn State Agronomy Guide (2002 Edition, pg. 29), the first year following an alfalfa stand >50% should contribute about 110lbs/ac N, 25-49% stand should contribute 70 lbs/ac N, and <25% should contribute 40lbs/ac N. Soybeans should contribute 1lb N per bushel of harvested grain. The N available will be determined by a PSNT sample in corn when it reaches 12".

Nutrient Applications:

All additional nutrients above the residual will be applied from commercial fertilizer sources.

According to the most recent Rutgers Cooperative Extension production recommendations for corn (Bulletin FS174, 2004) 182 bushel grain corn should receive 182 pounds of nitrogen and 0-20 pounds of P₂O₅ per acre as a starter for all fields due to Very High soil test levels of Phosphorus.

On grass hay fields, 50lbs/ac on N and potassium per the recommendation are applied at first green-up. 50 lb/ac N applications following each cutting except the last are applied. In most years, four hay cuttings are harvested. As such, in years where the number of cuttings is different, nitrogen applications should be applied approximately on a 50 lb N/ ton of hay harvested and split accordingly. Timothy fields are generally only cut two to three times, but still produce over 4 tons per acre. As such, these fields should be split to approximately 70lbs N/ac per cutting.

Alfalfa and alfalfa mix fields have potash applied per the soil test at green-up. This application may contain boron, per the soil test.

Additional applications may be needed if plants show visible deficiency symptoms, or a tissue test calls for additional nutrients.

Corn in the rotation will receive split applications, one prior to planting as a broadcast, the second as a sidedress. These rates will be determined by a PSNT test, and credits will be given for a soybean crop or alfalfa based on the condition of the alfalfa, or the production by the soybeans.

Within the crop rotation, a rye cover crop may be planted. If there is an adequate stand, and the rye will be cut for long straw, a 40lb/ac N application is needed.

NMP Revisions

Revisions are needed when application volumes deviate by 20% or more from the planned amount, or when the operation changes from one type of system to another. Plan should be updated as necessary with new soil test results.

Operation and Maintenance

The owner/client is responsible for safe operation and maintenance of this practice including all equipment. Operation and maintenance addresses the following:

- fertilizers should be stored and utilized at locations, times, and rates in accordance with the Nutrient Management (590) developed for this farm.
- A critical maintenance item is the calibration of spreading equipment. Calibration should be done annually.
- Keep complete and accurate records
- Control noxious and invasive weeds and shrubs

- Maintain filter strips. Annually harvest the vegetation to encourage dense growth and maintain vigor.

Safety

Workers should be protected from and avoid unnecessary contact with chemical fertilizers. Protection should include the use of protective clothing when working with plant nutrients. Extra caution must be taken when handling ammonia sources of nutrients.

The disposal of material generated by the cleaning of nutrient application equipment should be accomplished properly. Excess material should be collected and stored or field applied in an appropriate manner. Excess material should not be applied on areas of high potential risk for runoff and leaching. The disposal or recycling of nutrient containers should be done according to state and local guidelines or regulations.

Recordkeeping

Records shall be kept for a period of five years or longer, and include when appropriate:

- ? Soil test results
- ? Dates and amounts of applications where land applied
- ? Application methods
- ? Crop rotation and yields
- ? Records shall be maintained for five years; or for a period longer than five years if required by other Federal, state, or local ordinances, or program or contract requirements. See sample record keeping sheet on following page.

