NOVA SCOTIA NSFA FEDERATION OF AGRICULTURE

Nutrient Management Planning

Nutrient Management

Growing healthy crops and achieving profitable yields requires a soil that can supply balanced fertility through the growing season. The goal of any nutrient management strategy should be to balance nutrient inputs with crop requirements to optimize nutrient use efficiency, maximize yields and reduce nutrient excesses and losses to the wider environment.

Soil Health

Encouraging biological activity in the soil through organic amendment additions (e.g., mulches, manures or composts), cover cropping, reduced tillage and including forages in rotation, can increase soil organic matter, improve overall soil health, and promote more efficient nutrient cycling.

Soil Testing

Soil testing provides a wealth of information to crop producers. It gives a measure of the levels of plant available nutrients (both macronutrients and micronutrients), the level of soil organic matter, soil pH, limestone requirements, and fertility recommendations. The soils cation exchange capacity, which is a measure of the soils ability to hold and release nutrients, is also reported. These factors together help to describe the nutrient capacities and limitations of the soil and can act as a foundation from which good fertility decisions can be made. It is recommended that soils be tested at least once every three years or, in the case of high value cash crops or on fields with excessive nutrients, testing should be done more frequently.

Manure Testing

Manure nutrient content can vary depending on many factors. To meet nutrient management targets, manure should be tested for nutrient content at least once every three years or more frequently if a change occurs in livestock rations, method of storing manure, type and volume of bedding and/or waste feed added to the manure. Your manure analysis is only as good as the samples taken, so it is important to take good representative samples as close to the time of application as possible.

Tissue Testing

Soil testing is a good measure of the pool of nutrients plants can draw on from the soil. However, there are factors other than soil test nutrient levels that affect a plant's ability to take up nutrients (e.g., soil temperature, soil moisture, disease, etc.). Measuring the levels of nutrients within a growing plant is more indicative of the actual uptake of nutrients and can offer growers more information to help them make good fertility decisions. When taking tissue samples, it is important to sample at the right time and to take the right plant part.

Spreader Calibration

All soil amendments including manure and fertilizer should be applied accurately to meet nutrient management targets without over application. Spreaders should be calibrated on a regular basis for several application rates with the application rates related to a tractor speed (e.g. range, gear, and rpm).

4R Approach to Nutrient Management

4R Nutrient Management is a sustainable approach guiding farmers to optimize fertilizer use, ensuring the Right Source, Right Rate, Right Time, and Right Place®. This strategy emphasizes selecting the correct type of fertilizer, applying it at the optimal rate, timing the application to coincide with plant needs, and placing it in a manner that minimizes environmental impact. By embracing 4R Nutrient Management, farmers enhance crop productivity, reduce nutrient runoff, and contribute to long-term soil health.

Nutrient Management Plans

Nova Scotia soil test reports give general lime and fertility recommendations for specific crops based on the soil test results. However, soil test reports cannot incorporate many other factors that are specific to your farm into their recommendations. For example, manure applied one year will release a portion of the nutrients contained within in the first year, however, there will be a nutrient contribution from the manure in the second and possibly third year as well. Accurate nutrient recommendations depend on a knowledge of soil characteristics and fertility, the crop being grown, the cropping history of the field, added organic amendments, cover crops, crop residues etc. A formal nutrient management plan (NMP) prepared by a qualified nutrient management planner would consider the relationship between all of these factors allowing for a more accurate prediction of your soils ability to supply nutrients and therefore a more accurate estimate of the nutrients that would be required in a given year.

Fertility Plans

Some companies offer soil testing and fertilizer recommendations as a service. These fertility plans are often single year plans and generally do not include manure testing and recommendations.

Excess Nutrients

Farms with high livestock stocking densities, or with high historical manure or compost application rates may have excessive soil nutrient levels. Excess soil nutrients can be lost to the wider environment causing ground or surface water contamination or can build up in the soil causing crop production or livestock health issues. Work with a nutrient management professional to identify strategies to reduce nutrient levels in fields in the excessive range. Extra care should be taken to reduce the risk of soil erosion on fields with excessive nutrients. Eroded soil particles can transport nutrients into watercourses causing the degradation of the environment for aquatic organisms.

Livestock Stocking Density

The Nova Scotia Manure Management Guidelines recommend farms that don't have a current nutrient management plan restrict their stocking rate to a maximum of 1 livestock unit (LU) per hectare (2.5 acres). The number of animals equivalent to a single livestock unit is defined in the Manure Management Guidelines. If the stocking rate exceeds 1 LU/ha, then the amount of manure being produced cannot be spread on the farms land base without nutrient excesses becoming a problem. If your farm is in this position, purchasing more land or developing a manure disposal plan with another farm in need of additional nutrients should be a priority.

On-Farm Climate Action Fund (OFCAF)

The On-Farm Climate Action Fund (OFCAF), an Agriculture & Agri-Food Canada (AAFC) funding program delivered through Perennia, provides funding to farmers to improve nitrogen management on farms to support assessments, creation of nutrient plans, and other agronomic supports or technical services including soil testing and soil mapping costs. There is also funding support (up to 75%) towards the cost of fertilizer application equipment and equipment upgrades to allow for banding, side-dressing, and injection of fertilizers. The program also compensates the farmer for the difference between the cost of urea and the cost of either polymer coated urea (PCU) or a stabilized fertilizer which includes both urease and nitrification inhibitors or offsets the higher cost of adopting synthetic fertilizer substitutes (e.g. manure, compost, digestates).

Qualified Nutrient Management Planners

*Listed in alphabetical order. If you are a professional agrologist with nutrient management planning qualifications and would like to be added to this list, please contact efp@nsfa-fane.ca

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Labs

- *Nova Scotia Department of Agriculture Laboratory* (soil, manure, compost, tissue testing)
- *NSDA Lab - Fee Schedule*
- *NSDA Lab - Submission Form*
- *PEI Analytical Lab* (soil health testing)

Soil Testing

- *How to Take a Soil Sample* (Perennia)
- *Understanding the Soil Test Report* (NSDA)

Manure Testing

- *How to Take a Manure Sample* (NSDA)
- *Understanding the Manure Test Report* (NSDA)

Calibration

- *Calibration of Fertilizer Application Equipment* (NBSCIA)
- *How to Calibrate a Manure Spreader* (NSDA)

Compost

- *How to Take a Compost Sample*
- *Understanding the Compost Test Report*

Tissue Testing

- *How to Take a Plant Tissue Test*
- *Understanding the Tissue Analysis Report* (NSDA)

Funding

- *On-Farm Climate Action Fund*

Miscellaneous

- *Manure Management Guidelines* (NSDA)
- *4R Nutrient Management*