

Manure Management



In the Environment module of proAction®, farms are required to manage nutrients to make optimal use of manure and/or fertilizer on land (EN5). Farmers must have either a valid provincially approved nutrient management plan, OR test soil at least every three years for all lands receiving manure (or more often if required by provincial regulations), and use the results to make optimal use of manure or fertilizer on land.

Manure is a source of valuable nutrients that can improve crop fertility and soil health, and can reduce the need for synthetic fertilizer. Manure use may result in savings in fertilizer purchases when managed optimally. In addition to a general prohibition against pollution that exists in every province, most provinces have some level of regulation to govern manure and fertilizer use. All farmers are expected to be aware of, and comply with, the environmental regulations in their province of operation.

Nutrient Management Plans

A primary goal of a Nutrient Management Plan (NMP) is to make the best agronomic use of manure and other fertilizing inputs. This can impact a farm's bottom line by reducing fertilizer purchases, improving crop yields, and reducing nutrient loss to the atmosphere or surface and groundwater. In several provinces, NMPs are required based on the number of animal units or an increase in farm size.

NMPs are most helpful when updated annually, but are only required to be updated in accordance with provincial regulations if being used to meet this requirement.

Nutrient Management Plans typically include:

- Proposed rate of nutrient application, particularly nitrogen, phosphorus and potassium, taking into account crop nutrient requirements, soil nutrient levels and manure nutrient levels
- Proposed timing, frequency and method (injection vs. broadcast) of nutrient applications
- Location where manure and other nutrients will be applied
- Topography of the land to which manure and other nutrients will be applied
- Spreading agreements, where manure is being spread or sold off-farm
- Crop rotation and reasonable yield goal; and
- Tillage practices

Soil testing

Regular soil testing is a valuable tool to ensure soil nutrient levels are adequate to meet crop requirements and to prevent over-application of manure or fertilizer. Keep a copy of the test results and/or any other record of results. Fields with widely varying soil or topographical conditions can be broken into sections or zones for the purpose of sampling. The analysis on the soil should include both nitrogen and phosphorus to target the fertilizer requirements for that year's crop. In the prairies fall soil testing is standard and in other regions this will vary.

Some provincial regulations prescribe minimum requirements for analyses. Most soil analytical labs also recommend specific analyses and provide sampling methodology for the most accurate results, and in some cases the province dictates which method is to be used.

Manure testing

Guidance is available from most provincial ministries of agriculture, or through nutrient management specialists, related to how to take an accurate manure sample. It is recommended that manure be sampled at least once a year at time of spreading to ensure a representative sample can be collected. This analysis can be used along with historical values to calculate an individual farm nutrient content. These values can then be used to calculate field applications of manure instead of default or book values. Default values can vary widely due to factors such as animal diet, bedding, manure storage practices and additions of rain or wash water, and may not be accurate representations of a given farm's manure composition.



4R Nutrient Stewardship program

Fertilizer Canada promotes this program to improve nutrient management where farms purchasing fertilizer from participating 4R certified retailers follow these 4 pillars:

<https://fertilizercanada.ca/our-focus/stewardship/>



Soil suitability

Manure and synthetic fertilizers should not be applied on marginal lands, and should only be applied on lands with agriculture land classification 1-5.

Matching application rates to crop requirements

Manure and fertilizer application rates should be based on manure analysis, soil characteristics, residual nutrient content and crop nutrient requirements. An agronomist or manure management planner can be a useful resource here. Applying beyond crop nutrient needs increases the likelihood of nutrient losses, yield loss from lodging and in some cases milk fever. There is also the potential to under-fertilize and not fully maximize crop yields.

Appropriate application method

Recommended application methods are those which place the most nutrient, from manure or synthetic fertilizer, into the soil for better access by crops and protection from losses. Manure injection or low-level application followed by incorporation (Aerway) are preferable, as higher-level application results in more odour and higher losses of nitrogen.

Manure should never be applied through high-level irrigation systems. Split application can also help to improve nutrient use efficiency in some cases. In addition, maintaining manure application equipment in good working order and calibrating prior to application are recommended practices in order to ensure consistent and intended application rates.

Precision agriculture tools

These tools have numerous applications including mapping yields, variable rate fertilizer application, variable pesticide application, and other information that can be used to minimize inputs and losses to the environment, while maximizing yields.



Records related to these practices should be kept for a minimum of three years or the length of a crop rotation, whichever is longer.