

# ***The Status of Agricultural Soil Health in New Brunswick***

***Submitted to:***

***Standing Senate Committee on Agriculture and Forestry***

Department of Agriculture, Aquaculture and Fisheries  
Ministère de l'Agriculture, Aquaculture et des Pêches

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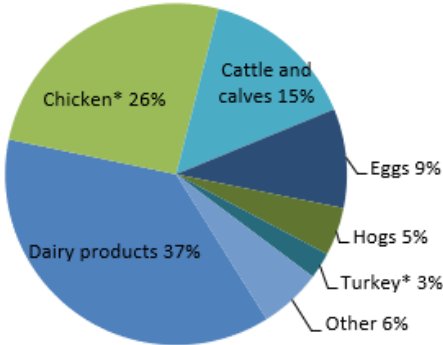
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# 1) Introduction

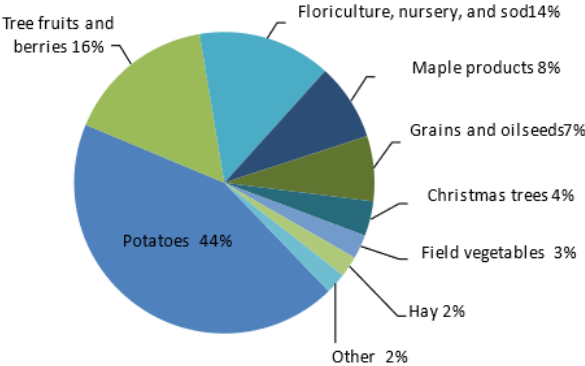
New Brunswick is a province rich in natural resources with agriculture being one of its major economic contributors and the foundation of our rural communities. In 2021, agriculture, agri-food and beverage production contributed approximately \$1.1 billion to our economy and accounted for 3.5% of the provincial gross domestic product (GDP), closely following the forestry sector that accounted for 4.3% of our provincial GDP.

The agriculture landscape in our province is very diversified compared to other Canadian provinces.

**Livestock Receipts in 2021: \$345.9 Million**



**Crop Receipts\* in 2021: \$381.9 Million**



\* excluding cannabis

Major production areas for wild blueberries are in the northeastern and southwestern parts of the province, and for cranberries the eastern half of the province. Potato production is focused in the north western part of the province in the upper Saint John River valley. The dairy and livestock industries are scattered around the province with a focus in the south-central region around the town of Sussex. Horticulture crops including vegetables, apples and small fruit are mainly grown in the lower Saint John River valley and in the southeastern part of the province, however, as with livestock, there are farms located around the province.

Only 5% of the province’s land base is used for agriculture. The total farm area in production from 2016 to 2021 fell by 18% to 685,378 acres. In comparison, the total farm area in production average across Canada decreased by 3% from 2016. Several factors led to the decrease including, poor suitability, but not limited to domestic and international markets fluctuations, urban sprawling, competing land use, lack of succession, and increase in farm input costs.

However, this is an exciting time for New Brunswick, after almost two decades of minimal population growth, the number of people living in our province increased by more than 50,000 since 2016. This creates a strong case to focus on the opportunities for growth within the agriculture sector, from increasing our food self-sufficiency to meeting export demands.

Producers are the original stewards of the land. Their livelihood is dependent on soil health, and the climate in which they grow. Soil health plays a vital role for our entire industry as it is the base of livestock feed production and food for our citizens and those of the world. The Department of Agriculture, Aquaculture and Fisheries (DAAF), industry partners and producers have for many years recognized the importance of our soils. Many opportunities and challenges remain to ensure that we optimize our collective efforts in ensuring the sustainability of our resources, protecting the environment addressing climate change while ensuring the economic viability and growth of our sectors.

## **2) Current state of agricultural soils in New Brunswick**

There are many soil types and textures across the province. Most are noncalcareous. Several challenges and opportunities exist for crop and livestock production across the province that can be addressed by improving soil health and by increasing carbon sequestration.

The NB Department of Agriculture, Aquaculture and Fisheries recently conducted an evaluation of New Brunswick Soil Health Status with the goal of identifying opportunities and sources of residual amendments. New Brunswick soil health status was evaluated for 15 counties with soil data from the PEI and Ontario laboratories. The evaluation consisted of reviewing close to 125,000 soil test results taken from 2010 to 2021.

New Brunswick has natural acidic soils. The evaluation demonstrated 100% of the soil had below recommended pH levels for optimal field crop and vegetable production and only 40% of the soil samples were at optimum pH levels for potato production. Soils with low pH levels create challenges in terms of overall yield reduction and increased fertilizer use. The same data indicated that soils were low in calcium. Calcium deficiencies are common in noncalcareous soils, especially in soils with low pH levels.

Soil phosphorus levels were at optimum levels for field crops, wild blueberries, and vegetables, but would not meet the optimum levels required for potato production. It is important to note that aluminum, naturally present and found at high levels in New Brunswick soils, affects the availability of phosphorus to the crop.

Potassium was also found to be below optimum levels for field crops, vegetables and potatoes. Deficiencies tend to lead to higher incidence of diseases and insect damage. Optimal potassium rates are important for many crops grown in the province, but excessive potassium levels decrease calcium and magnesium uptake.

Lower than optimum levels for magnesium were not observed as frequently compared to the other nutrients described above. Sulfur levels were at optimum levels for wild blueberries, potatoes, field crops and vegetables.

In addition, soil structure degradation from continuous production is a challenge throughout the province. The continuous cultivation of annual crops has increased

erosion of soil from wind and water, soil compaction, lower soil organic matter and lowered nutrient and water holding capacity in some fields.

The needs for soil acidity neutralizing amendments in the Atlantic region have been well documented. Crops need to grow in their optimal pH range for optimum fertilizer use efficiency and optimum yield and quality. High carbon sequestering crops, such as alfalfa and other leguminous crops do not grow well without soil neutralization.

### **3) Role of governments**

With time there has been a shift in availability of information on the benefits of beneficial management practices (BMPs). Science and policy play a large role in providing producers with the best decision-making tools thereby allowing them to implement the best possible BMPs for their farming operations.

DAAF has been working in collaboration with other provincial departments, Agriculture and Agri-Food Canada, Agricultural Associations, various stakeholders, and producers to increase awareness and support producers with the adoption of BMPs for several years. The Environmental Farm Plan has been delivered in New Brunswick since 1996. The program has been key to increase environmental sustainability on farms, including a focus on soil management. Financial support for BMP's associated with, environment, climate change and soil health from the Federal, Provincial and Territorial cost-shared framework will be an area of focus for New Brunswick under the new five-year Sustainable Canadian Agriculture Partnership (Sustainable - CAP).

All levels of government need to continue to work in collaboration with industry to align research and knowledge transfer, in addition to offering programs for soil health and climate change. Farmers need reliable sources of information and technology transfer to navigate the ever-expanding knowledge base and assistance to navigate the right steps and practices on their land. DAAF staff play a key role in supporting and facilitating the adoption of BMPs, navigating the programs and providing reliable information.

Agriculture and Agri-Food Canada has been involved in crop breeding research in many commodities from potatoes and grains to apples and strawberries. This research is key as it allows for new varieties that are better adapted to regional soil types and climatic conditions and must also be conducted in our province to reflect our unique conditions. New varieties that better sequester carbon and build larger and more resilient root systems is key and could help build soil organic matter and structure. In addition, technologies, and practices, not well known to our province, could assist New Brunswick producers in improving their soil management, soil fertility and productivity. Due to the uniqueness of our soils and climate, it is important that this research is not only conducted in larger agriculture Canadian regions but in our province and other Atlantic provinces.

## 4) Implications of soil health

In 2020, following the onset of the COVID-19 pandemic, DAAF released an Action plan focused on [Improving Food Self-Sufficiency](#) . Recognizing the vulnerabilities within our food value-chain, it was critical to address several key areas: local food and beverage promotion, market access, land access, processing, packaging and storage capacity, labour, education and training, financial programming, controlled environment agriculture, and the growth and expansion of the agriculture, aquaculture, and fisheries sectors.

As part of the development of the action plan, a vegetable producer survey demonstrated that two limiting factors for the expansion of existing operations was the accessibility and availability of land and the cost associated with bringing idle land back into production.

The promotion and adoption of BMPs, including soil erosion control, implementation of the 4R Nutrient Stewardship (right source, right rate, right time and right place) for nutrients application, improvement of soil organic matter through crop rotations, reduced tillage, and organic amendments are among the strategies put forward to rebuild, protect, and nurture the health of our soils. Building up the soil health as the foundation for optimum crop production will only make it possible all of the above-mentioned efforts to bear fruits and to sustain an improved livelihood suitable for current and future generations.

In that regard, increasing the productivity of existing farmland by focusing on healthy soils will contribute to the sustainability of our sectors, meeting the increasing demand for food, while preserving the environment. As farms become more profitable from increased yields, they will also see reduced fertilizer input costs.

Water and air quality will be improved as soil health and structure improve. Healthy soils are less erodible and have a higher nutrient holding capacity. This reduces sedimentation and nutrification of water bodies. Wind erosion can create air quality issues. Healthy agricultural crops clean the air, require less chemical plant health care interventions and release oxygen to the atmosphere.

## 5) Recommendations for sustainable soil health

Government, institutions, non-governmental organizations (NGO), and producers are focusing their efforts on key initiatives that contribute towards improving soil health. Addressing soil health across Canada requires a long-term commitment and coordination from all levels of government, industry stakeholders and producers.

Soil health is an ongoing challenge across Canada and the majority of the BMPs adopted at the farm level take a long time to show the full benefits.

Sustainable-CAP will support these efforts by providing education and financial support

for the adoption of BMPs that will help restore and sustain soil health, provide support for adaptive field research and demonstrations, Environment Farm Plan delivery, and for the adoption of on-farm innovations and new technologies.

To help support these efforts, we recommend that increased focus on research and collaboration among all levels of government, NGO's and producers be focused on soil health. Addressing soil health will contribute towards the sustainability of our sectors and our climate change mitigation challenges.

New Brunswick farmers are ready and willing to make improvements on their farms if the science and economics make sense. Education and financial assistance to overcome the financial barriers will go a long way to making improvements in soil health and the overall health of the ecosystem.