My Thoughts on Canadian Food Security

Phil Gregory, June 22, 2026

Late in 2014, I was surprised to read the warning from the UN Food and Agriculture Organization that there was only 60 years of farming left on our planet due to soil degradation. On closer investigation I discovered that this was primarily because of our current approach to farming which results in the loss of 7 tons of topsoil for every ton of food produced. I set out to explore how to sustain human life on our planet Earth.

I learned that Canadian agriculture has been shaped for 70 years by an external-input-driven production model optimized for uniform, large-scale marketing where:

- Soil is a *growth medium*, not a living system
- Soil fertility is managed by chemical-input**,** NPK (Nitrogen, Phosphorus, Potasium) , not soil biology and microbial networks
- Seeds are bred or genetically modified to benefit from chemicals not soil biology
- Productivity is *inputs → outputs*, not *ecosystem processes→ sustained performance*
- farmers were advised to invest in the chemical approach and grow their farm size or get out

So how has that worked out?

Recently, I did a deep dive into Statistics Canada's data bases on the economics of Canadian agriculture over last 99 years. Figure 1 shows the Financial Evolution of Farming in Canada from 1926-2025 in four separate plots. Take a moment to examine them and read the explanations below the plots.

The Green Revolution got underway in Canada in the late 1950s. Prior to that, the cost of the inputs required to earn a gross revenue of $1 ranged from 40 to 65 cents, briefly reaching a peak of 85 cents at the height of the great depression. From 1959 the cost of inputs continued to rise reaching $1 by about 1985. In the last 40 years input costs have remained high and during 15 years they exceeded revenue. It is clear that the growth in revenue is now entirely due to the growth of inputs, with chemical and seed costs typically accounting for 50-70% of total inputs. In the mean time total outstanding farming debt is rapidly rising and is already about $150 billion. How long can this continue? We have moved into the era where chemically intensive farming is not profitable and is currently subsidized to the tune of about $4 billion a year on average.

Several UK and U.S. organizations have calculated that the true cost of food is significantly higher (from 2 to more than 3 times) than the price paid at the grocery store. Key analyses include the Rockefeller Foundation's *True Cost of Food* (2021), the Sustainable Food Trust's *Hidden Cost of UK Food* (2019), and the UK National Food Strategy (2021). The gap arises because the current system externalizes major costs onto public budgets and future generations, including:

- soil degradation and nutrient loss
- rising chronic disease burden
- water contamination and treatment costs
- biodiversity decline and climate-related vulnerability
- rural economic decline

These costs do not disappear; they simply fall outside the farm gate and onto healthcare systems, environmental remediation budgets, and long-term economic stability.

Is there another way, one that is profitable and beneficial to the environment and human health?

I believe the answer is a definite yes. I wrote a book about this new approach in *Pathway to Regeneration,* in 2021.

The answer lies in a revolution in our understanding on how nature works with a vast array of beneficial soil microbes to cover the planet with plants and animals. The past several decades has seen an impressive advances in the soil biology of this invisible soil microbiome. Many pioneering farmers in biologically based regenerative agriculture are returning to profitability growing nutrient dense foods.

But here is the big challenge.

When regenerative growers and soil scientists talk about soil microbes, nutrient cycling, or biological degradation, they're not seen to be contradicting the current worldview — they're seen to be speaking **outside** it.

This is why:

- Ministers talk about "soil health" but mean "erosion control + carbon accounting"
- Agriculture and Agri-Food Canada frames soil biology as a niche research area
- The Standing Committee hears "regenerative" and thinks "cover crops + reduced tillage"
- No one connects soil biology to nutrient density, chronic disease, or fiscal sustainability

It's not malice. It's not stupidity. It's more likely paradigm lock-in, where the existing model tends to perpetuate itself through established incentives and structures.

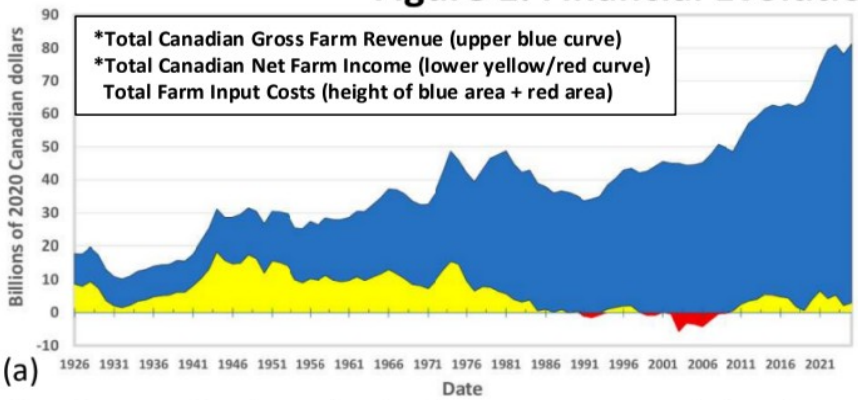
But here is the good news. Regenerative agriculture is not simply a set of practices but a fundamentally different system—one that reduces externalized costs and strengthens long-term economic resilience.

I believe Figure 1 demonstrates how Canadian agriculture is becoming increasingly vulnerable. The main conclusion is that rising input dependence, declining soil organic matter, and reduced soil biological activity have eroded the natural resilience that once supported stable farm incomes and reliable food production. These ecological and economic pressures are converging at a time when global supply chains, climate conditions, and input markets are becoming more volatile. For island communities, the implications of these trends are especially significant. Supporting the long-term viability of island farming activity is therefore not only an economic and environmental priority but a key component of local food security and community well-being.

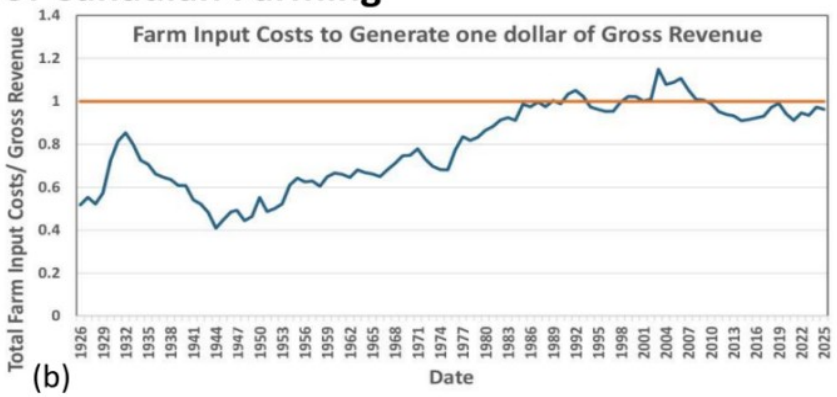
While the exact timeline of future disruptions cannot be predicted, the direction of change is clear: without rebuilding soil function and reducing dependence on external inputs, the capacity of agricultural systems to provide secure, affordable food will continue to weaken. Strengthening soil health and supporting regenerative, biologically based practices are therefore not only environmental priorities but essential risk-management strategies for long-term community food security. A long lead time is involved in creating these new farming and home gardening activities. The best time to start was yesterday.

Click here for landscape view of the Figure. The printable portrait version is on the following page.

Figure 1. Financial Evolution of Canadian Farming



(a)

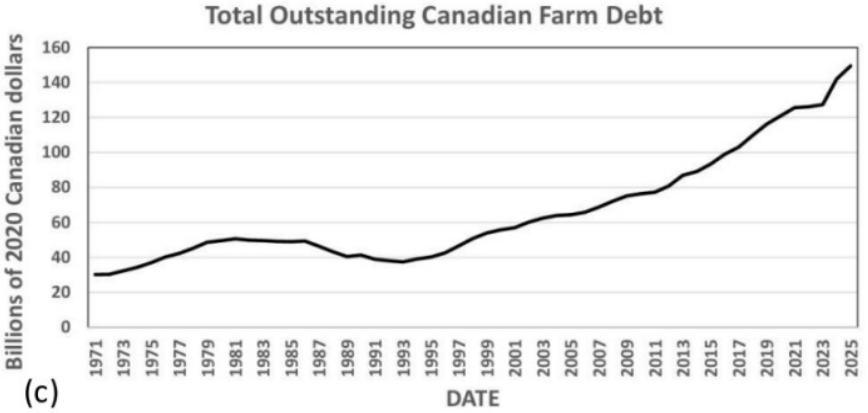


(b)

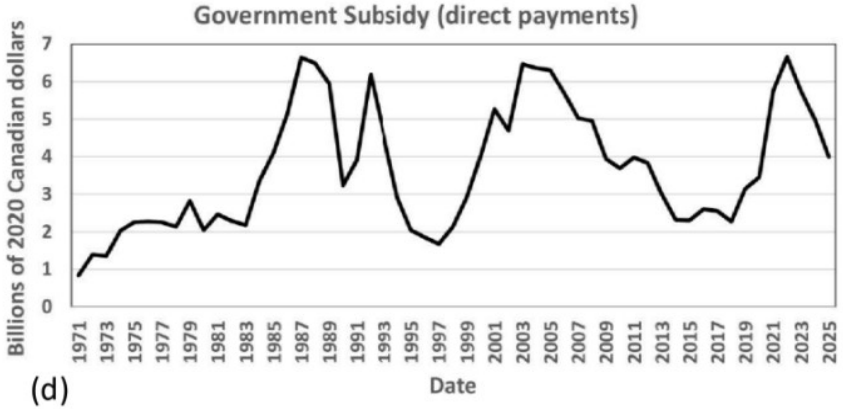
These figures are based on archival and current Statistics Canada farm data analyzed by UBC Emeritus Professor Phil Gregory. Total farm input costs include fertilizer, pesticides, fuel, seed, feed, machinery repairs, custom work, interest, depreciation, land rent, irrigation, insurance, utilities, and hired labour.

Gross farm revenue has continued to rise, but input costs have risen faster as production efficiency has declined. By 1985, panel (b) shows that every dollar of gross revenue required roughly a dollar of inputs, with net farm income turning negative in 15 of the following years. From 1985 to 2025, input providers captured approximately 98% of all farm revenue, with chemical and seed costs typically accounting for 50–70% of total inputs.

**Government subsidy payments shown in panel (d) were subtracted from gross revenue and net farm income to remove the masking effect these payments can have.*



(c)



(d)

While industrial agriculture has generated strong returns for input suppliers, these gains have coincided with farmers taking on an increasingly unsustainable debt load—now approaching $150 billion. Since about 2012, this debt has risen sharply, reflecting the growing cost of maintaining production in a system that depends heavily on external inputs. The long-term trends indicate that the current agricultural system is hitting ecological, economic, and social limits. Strengthening soil health and supporting a transition to biologically based regenerative practices are essential steps toward restoring soil function and enabling farmers to work with the natural microbial processes that underpin productive and resilient agriculture.