Memo to: The Standing Senate Committee on Agriculture and Forestry

Topic: Submissions on 'The Role of The Agriculture and Agri-food Sector with regard to Food Security in Canada'

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1. Introduction

This report was prepared for the Standing Senate Committee on Agriculture and Forestry by Mary Lou McDonald, the President of Safe Food Matters Inc. As the name suggests, the goal of Safe Food Matters is to ensure Canadians consume food that is safe.

Our work to date has been focussed on trying to hold Health Canada's Pest Management Regulatory Agency (PMRA) to account. They are the decision makers on what pesticides get in and on to our food, and their mandate is to protect Canadians and the environment. They must have a reasonable certainty that no harm will arise from the use of the pesticide in issue - a very high standard. We have taken them to court, and unfortunately are still in court, regarding their approval of glyphosate, because we think they did not properly consider the harms arising from the use of this pesticide just before harvest, the time when it can get right into our food.

Food security, as defined in the Food Policy for Canada, means that 'all people in Canada are able to access a sufficient amount of safe, nutritious, and culturally diverse food.' From a policy perspective, we approach this work through two complementary aspects: first, reduce the negatives; second, increase the positives.

This report aims to illustrate this framework across three dimensions:

Quality of Food: Reducing the negative means making food less harmful by reducing contamination. Increasing the good means increasing nutritional content and nutrient density.

Access to Food: Reducing the negative means reducing food waste. Increasing the good means developing better infrastructure and delivery systems.

Market Development: Reducing the negative means avoiding production practices that misalign with social, environmental and economic values. Increasing the good means producing more of the clean food that people want, both here at home and in export markets—there is a huge opportunity for organics that should be supported.

2. Quality of Food

2.1 Reducing the Negative: Pesticide Contamination

The primary driver of pesticide contamination in Canadian food is pre-harvest application of glyphosate and other desiccants, particularly on cereals and pulses. Recent Canadian Food Inspection Agency testing (2021-2022) found glyphosate in 85% of grain-based products sampled from 11 major cities across Canada.

The Pre-Harvest Problem

According to Charles Benbrook, coordinator of the Heartland Study examining glyphosate levels in pregnant women, pre-harvest desiccation may account for only about 2% of total agricultural glyphosate use, but it accounts for well over 50% of dietary exposure because it is applied directly to food crops pre-harvest.

Why is it applied? Pre-harvest use basically replaces swathing. It kills the crop or the growth around the crop to make it easier to gather at harvest. But the problem is the pesticide get right onto or into the food. If the pesticide is “systemic”, meaning it gets into the plants system, it moves in the circulation system during the time the plant is growing, and dumps the pesticide right into the seed. Labels try to mitigate against this by saying don't apply when there is more than 30% moisture content in the seed, but it isn't working.

Analysis of glyphosate residues in Canadian retail foods (2015-2017) found glyphosate residues in:

- 50-76% in wheat products, barley products, and oat products
- 20-45% in other grain products, corn products, and pulses
- 0-15% in fresh fruits and vegetables, dairy and meat products

The highest residue levels were consistently found in pulses and wheat products where pre-harvest application is permitted. CFIA testing in 2015-2016 found that most samples exceeding Canadian maximum residue limits were predominantly grain products, with particular concerns about beans, peas, lentils, and chickpeas used in pre-harvest use.

Agriculture and Agri-Food Canada research on malting barley showed high levels, and exceedances of Canadian maximum residue limits (MRLs), even when glyphosate was applied according to the “30% moisture content” label directions. I commend the barley industry for partially funding this study - it was trying to better understand the effect of pre-harvest spring on its crop. It found "In real farming conditions, it might be hard to achieve similar results despite adherence to the recommended timing of glyphosate application because of the nonuniform level of crop maturity in the field and/or uncontrollable environmental effects." Companion research noted that "there seems to be a weaker link between crop phenology stage and grain moisture than suggested by glyphosate timing materials intended for producers," indicating that label directions do not adequately account for real-world variability.

Why Label Directions Don't Prevent Contamination

Label directions for pre-harvest glyphosate application prove inadequate for several reasons:

First, the standard label requirement that grain moisture be at or below 30% at application is difficult to determine accurately in field conditions. Farmers must make subjective assessments without standardized verification methods, and moisture content can vary significantly within a single field. The Agriculture Canada barley studies found considerable variation in actual kernel moisture at different crop development stages, demonstrating the weakness of relying on visual crop staging as a proxy for appropriate moisture levels.

Second, crops with indeterminate growth patterns—such as many pulse varieties—continue to produce new growth even as older portions of the plant mature. This makes it impossible to identify a single optimal application timing that

minimizes residues while achieving desiccation. Fields exhibit nonuniform levels of crop maturity, introducing kernel shape and size variations.

Third, weather conditions after application dramatically affect residue levels. Rainfall, temperature, and humidity influence how quickly the herbicide degrades and how rapidly the crop dries. The same application timing that produces acceptable residues in dry conditions may result in elevated contamination during cool, wet harvest periods. As the Agriculture Canada research documented, uncontrollable environmental effects prevent consistent outcomes.

Fourth, the 30% moisture threshold has never been validated as appropriate across all crop types. What works for wheat may not be suitable for lentils, oats, or edible beans, yet labels apply the same standard universally without proof of verification that those labels equate to the time when a crop is “physiologically mature’ - that is, ready for swathing.

Health Concerns and Vulnerable Populations

Pre-harvest glyphosate residues pose particular health concerns for vulnerable populations. Wheat-based products and pulses (beans, lentils, chickpeas) are dietary staples, especially for infants and young children. According to Vandelac et al.'s research on pesticide use in Canada, infants and young children consume disproportionately high amounts of wheat-based cereals, crackers, and grain products—the very foods showing the highest glyphosate contamination rates. The study notes that "despite discourse advocating pesticide reduction, there has been an exponential increase in pesticide use worldwide in the agricultural sector over the last 30 years," with glyphosate-based herbicides (GBHs) accounting for 58% of pesticides used in the agriculture sector in Canada in 2017.

This creates a concerning exposure scenario: young children consume more grain products per unit body weight than adults, their developing organ systems are more vulnerable to chemical exposures, and they are being exposed during critical developmental windows. Research indicates wheat and beans with glyphosate residues may be linked to celiac disease and other gluten-related disorders, with studies suggesting that glyphosate exposure contributes to bacterial imbalances in the gut associated with these conditions.

Beyond cancer concerns, research indicates glyphosate may negatively alter the human gut microbiome. A University of Turku study found 54% of human intestinal bacterial species potentially sensitive to even small amounts of glyphosate.

According to the Statistics Canada CCHS data, mass produced breads are the top source of ultra-processed food calories in Canada, and many ultra-processed foods such as cereals, crackers and snacks contain grain ingredients. Given that the CFIA data showed that 85% of grain products test positive for glyphosate residues, this raises particular concerns for Canadians, because, unfortunately, Canadians are the world's second-largest buyers of ultra-processed foods, after the US, according to research by the Heart and Stroke Foundation.

The Assessment Problem

Health Canada's Pest Management Regulatory Agency (PMRA) employs assessment practices that systematically underestimate risks from pesticide exposure.

Missing the Forest for the Trees, or the "Silos vs. Systems" Approach: one of the main problems is the regulator focuses in on and assesses only one aspect of effects that occur in the real world:

Incomplete Product Testing: It looks at the active ingredient in the pesticide, and not the whole product, whose ingredients can also be quite harmful:

- As documented by Vandelac et al., "when assessing environmental and health impacts of pesticides, the PMRA ignores surfactants, heavy metals, petroleum and other 'contaminants.'" Research has found formulations to be up to 1,000 times more toxic than the so-called "active" ingredient in eight of the nine best-selling pesticides worldwide.
- One of the glyphosate-based herbicides (GBH), widely used in Canada, is Bayer CropScience/Monsanto's Roundup WeatherMax, and it contains formulants such as arsenic, chromium, and lead—known toxic and endocrine disruptors.
- While polyethoxylated tallow amines (POEAs) were banned in Europe in 2016 due to their toxicity, they remain among the multiple co-formulants authorized in GBHs in Canada. PMRA's 2017 glyphosate re-evaluation exceptionally assessed POEA only to conclude: "No human health risks of concern were identified for these end-use products, provided that they contain no more than 20% POEA by weight."
- The European Strategy for a Non-Toxic Environment went about a major shift in acknowledging that "the current risk assessment requirements... are not designed to identify the risks associated with mixtures."

As if no body burden: The PMRA considers the effects of a pesticide on a human as if the only body burden of that person is that particular pesticide. It does not consider how all the different chemicals, let alone pesticides, to which we are exposed might interact to cause us harm.

- **CDC National Health and Nutrition Examination Survey (NHANES)**
  The CDC National Report on Human Exposure to Environmental Chemicals provides an ongoing assessment of the U.S. population's "body burden". You can access specific Biomonitoring Data Tables to see the levels of hundreds of individual chemicals measured in the blood and urine of Americans.

- **EWG Umbilical Cord Study**
  The landmark report, Body Burden: The Pollution in Newborns, details how researchers found an average of 200 industrial chemicals and pollutants in the umbilical cord blood of 10 babies. A follow-up study specifically focused on Pollution in Minority Newborns found up to 232 industrial compounds, including the first detections of BPA in U.S. newborns.

- **European Strategy for a Non-Toxic Environment**
  The EU Chemicals Strategy for Sustainability outlines a roadmap toward a "toxic-free environment." It specifically identifies the need to address the "cocktail effect" by accounting for combined exposure to multiple chemicals in risk assessments.

Combinations: Similarly, it allows for combinations, or tank mixtures, of pesticides to be sprayed together, but doesn't look at the effects of rising from this combination. It assesses them in separate silos. Research from the Silent Spring Institute shows how everyday "stacks" of chemicals (from cleaners to cosmetics) contribute to breast cancer risk in ways single-chemical tests miss.

The Dose does not Make the Poison. Modern research into **Endocrine Disrupting Chemicals (EDCs)**—like phthalates, BPA, and PFAS—challenges this mantra. PMRA recently approved two “PFAS”, forever chemicals, and inappropriately applied a toxicology “dose makes the poison” approach to cyclobutrifluram and isoclycloseram.

Reliance on American Consumption Data: PMRA uses United States food consumption data in its dietary exposure assessments rather than Canadian-specific dietary patterns. This may fail to capture uniquely Canadian consumption patterns, regional dietary preferences, and foods particularly important to Indigenous peoples and other cultural communities. As Vandelac et al. note, PMRA relies heavily on "manufacturer's studies and data" rather than independent Canadian research.

Exclusion of Forest Foods and Indigenous Exposure: PMRA does not assess consumption of forest foods—wild blueberries, raspberries, mushrooms, medicinal plants, and game—that are critical to Indigenous food systems and sovereignty. Glyphosate is extensively applied in forestry operations for vegetation management, yet PMRA's dietary exposure assessments completely ignore this pathway. Our report “Forest Spraying and Forest Food” describes this in detail.

This exclusion has severe implications for Indigenous communities who rely heavily on traditional foods. The First Nations Regional Health Survey reports that nearly all First Nations adults in B.C. had eaten traditional foods in the previous year, with 26.2% often consuming berries or other wild vegetation. Almost 20% of females had gathered berries or other food in the previous three months. Traditional food sharing reduced food insecurity—adults who shared traditional foods in their households showed 11.0% food insecurity compared to 17.4% for those without such sharing. In Canada's northern territories, 28.3% of people in Yukon, 14.4% in Northwest Territories, and 13.6% in Nunavut reported eating berries from the land in the previous seven days.

High Glyphosate Residues in Forest Foods: Research demonstrates that glyphosate accumulates in forest foods at levels far exceeding safety limits and persists for years. University of Northern British Columbia studies found glyphosate in all plants tested one year after spraying, with 26% of berry samples exceeding Health Canada's default maximum residue limit of 0.1 ppm. The chemical persists for up to 12 years in root tissues of some species and up to three years in raspberry and blueberry fruits.

A 1988 Canadian Forestry Service study reviewed by PMRA found initial mean residue values of almost **20 ppm in red raspberries and 7.4 ppm in blueberries** following aerial application—levels 70-200 times higher than the default MRL. The study found that "at no time during the study period did glyphosate level dissipate to below the legal tolerance of 0.1 ppm in either substrate." The authors acknowledged that "[a]lthough treatment areas are posted, contaminated fruit may be consumed by various wildlife species and picked by humans for personal consumption or commercial sale."

PMRA's Dietary Exposure Assessment fails indigenous peoples: PMRA's dietary exposure assessment uses U.S. food consumption data rather than Canadian consumption patterns, and critically, does not include forest foods in the survey at all. When Safe Food Matters provided the University of Northern B.C. studies to PMRA in 2024 and asked whether it had assessed consumption of foraged traditional foods, PMRA did not answer the question. It responded only that its assessment was "protective" for the residue levels measured one year after spraying— ignoring the much higher residues in berries picked during the year of application and failing to address whether forest food consumption patterns were even considered.

This means PMRA has never assessed the dietary risk to the significant portion of Indigenous peoples who regularly consume forest foods, despite having evidence since 1988 that glyphosate residues in these foods are extremely high and persistent. The result is systematic underestimation of risk to communities that depend on forest foods for nutrition, food security, cultural practices, and food sovereignty—particularly when 38.7% of Indigenous peoples already experience food insecurity and rely on traditional foods to supplement inadequate food supplies.

2.2 Increasing the Good: Nutrient Density Through Soil Health

The Hidden Nutrition Crisis

The Health Council of Canada reports that chemical fertilizers, pesticides, and industrial agriculture have depleted essential minerals from our farmland, resulting in foods that contain up to 40% fewer nutrients than they did 50 years ago. This nutrient decline directly impacts our health, contributing to rising rates of mineral deficiencies and chronic diseases.

Modern wheat contains 19-28% less zinc than historic varieties, and modern carrots have about 24% less calcium. Research over decades shows reductions: calcium levels in broccoli down by more than 60%, protein content in maize dropped by 20% between 1921 and 2001, and magnesium levels fell by 25%. Studies have found reductions of between 6% and 38% in calcium, phosphorus, iron, riboflavin, and vitamin C across various crops.

This nutritional decline (sometimes called the “hidden hunger”) stems primarily from soil depletion, where intensive farming practices and the overuse of chemical fertilizers have **disrupted the natural mineral cycles in our agricultural soils.** When crops are continuously grown without proper soil management, they gradually exhaust the soil's mineral reserves, resulting in less nutritious produce. The reduced

mineral content in our food may contribute to widespread deficiencies, even among people who eat a balanced diet.

Moreover, there is growing evidence that micronutrients are involved in plant immunity against pathogens. In addition, micronutrients, especially B, Cu, and Mn, are important for the structural stability and mechanical resistance of the cell wall, which is the first barrier against pathogens.

How Soil Degradation Reduces Food Nutrition

The mechanism connecting soil health to nutrition is direct: plants need 18 essential nutrients to grow, 15 of which come from the soil. Inadequate nutrients in the soil directly affect food nutrition content—crops grown in nitrogen-poor soils will have lower protein content. Studies have demonstrated a geographical overlap between zinc, selenium, and iodine deficiencies in cultivated soils and the respective deficiencies of the populations in those regions.

The nutrients in chemically fertilized soil tend to be less balanced and bioavailable compared to naturally enriched soil. Chemical fertilizers alone often lead to nutrient imbalance and accumulation of nutrients that cannot be effectively utilized by crops, while synthetic nitrogen fertilizers disrupt soil microbial communities—particularly mycorrhizal fungi—that play essential roles in mineral uptake by crops. This impacts plant health and the nutritional value of foods.

Soil health is One Health, as emphasized by the Senate Committee report "Critical Ground". A comparison of conventional and regenerative farming showed that regenerative produced crops with higher soil organic matter levels, soil health scores, and levels of certain vitamins, minerals, and phytochemicals. In addition, conventional foods have higher toxic metals than organic foods, particularly cadmium and lead.,

The Conventional Agriculture Traps

Modern intensive farming practices create a vicious cycle of soil degradation. The continuous cultivation of single crops (monoculture) depletes specific nutrients from the soil, creating nutrient imbalances that are difficult to restore naturally. When farmers plant the same crop repeatedly without rotation, beneficial soil organisms decline, and the soil structure deteriorates.

Chemical fertilizers compound the problem. The repeated application of synthetic fertilizers reduces the soil's natural ability to retain nutrients, leading to a cycle where increasingly more fertilizer is needed to maintain crop yields. These fertilizers harm beneficial soil microorganisms that naturally help plants access nutrients, essentially weakening the soil's ecosystem.

This cycle represents what Canadian researchers Stuart B. Hill and Rod J. MacRae (McGill University) identified in the 1990s as the "efficiency/substitution trap"—where farmers become trapped in repeated reliance on external inputs without addressing root causes of soil degradation. Current policy emphasizes improving input efficiency (precision application, soil testing) or substituting synthetic inputs with organic

alternatives, but these approaches fail to restore the farm's baseline productive capacity. As Hill and MacRae demonstrated, neither efficiency improvements nor input substitution confront the fundamental problem: soils depleted of their natural fertility require ever-increasing external support, whether that support comes from synthetic or organic sources.

Fertilization practices are very inefficient. In 2010, cropland plants globally **absorbed 73** million tons of nitrogen compared with **161 million tons of nitrogen inputs**. Nitrogen use efficiency decreased from 53% in the 1960s to 44% in the 2010s—meaning nearly half of applied nitrogen is unused by plants in the year it is applied. The FAO says this economic and environmental costs of this inefficiency is approximately $200 billion annually, with damage to human health and the environment amounting to between $400–$4,000 billion annually.

The Organic Solution: Evidence from Research

The Organic Task Force Report examined 100 farms across Canada—50 organic and 50 conventional—conducting the most comprehensive on-farm research comparing these systems. The findings demonstrate that organic agriculture offers a pathway out of the soil degradation crisis:

Economic Performance:

- **117% higher net return per acre** compared to conventional agriculture
- Reduced input costs from eliminating synthetic nitrogen fertilizers and pesticides
- **50% less energy use** and **40% more efficient** resource use
- Higher profit margins despite lower gross yields in some cases

Soil Health Benefits:

- Higher soil organic carbon (SOC) levels
- Greater biodiversity both above and below ground
- Diversified crop rotations with cover crops
- Enhanced soil structure and water-holding capacity

Environmental Benefits:

- Lower greenhouse gas emissions per unit of production
- Reduced water pollution from eliminated synthetic inputs
- Enhanced ecosystem services and wildlife habitat

Research published in *Science Advances* analysing 1,071 organic farms and 4,321 farm comparisons over 40 years found that properly managed organic soils show significantly higher soil organic matter (SOM) levels. Each 1% increase in SOM translates to approximately **25,000 gallons of additional water retention per acre**—critical resilience in the face of both drought and flooding. Higher SOM also improves water infiltration rates and nutrient availability.

These beneficial management practices also deliver specific ecological and agronomic benefits. Research published in *Science Advances* on organic agriculture

performance demonstrates that higher soil organic matter content leads to improved water holding capacity and infiltration rates, translating to higher yields and water use efficiency under both drought and excessive rainfall conditions. This resilience becomes increasingly critical as climate change intensifies weather variability.

Working Within the Ecological Capacity of the Farm: The Redesign Paradigm

Agricultural productivity must be understood within environmental, ecological and planetary boundaries. **Canadian agroecological research pioneered by Hill and MacRae established that sustainable agriculture requires fundamental "redesign"—restructuring farm systems to work with natural processes rather than overriding them with external inputs.**

Their Efficiency-Substitution-Redesign (ESR) framework has been adopted globally by the UN FAO and has been embedded in international agroecology policy. It sees 3 stages in the transition from conventional to sustainable agriculture:

Stage 1 - Efficiency: Reducing wasteful use of conventional inputs through precision application, monitoring, and optimal timing. *While beneficial, this approach maintains dependence on external inputs and does not restore soil health.*

Stage 2 - Substitution: Replacing synthetic inputs with organic alternatives (biological pest controls, organic fertilizers, mechanical cultivation). *This reduces environmental harm but still relies on external solutions rather than rebuilding the farm's inherent productive capacity.*

Stage 3 - Redesign: Fundamentally restructuring farming systems to maximize existing soil nutrient cycles, water cycles, energy flows, beneficial organisms, and natural pest controls. *This is the transformational stage that restores baseline soil fertility and creates self-sustaining productivity.*

Hill and MacRae emphasized that "working with natural soil processes is of particular importance" and that sustainable systems must "take maximum advantage of existing soil nutrient and water cycles, energy flows, beneficial soil organisms, and natural pest controls. By capitalizing on existing cycles and flows, environmental damage can be avoided or minimized."

Recent analysis of 1,923 agricultural research publications found that while 48% focus on input substitution, only 2.7% explore the wholesale redesign of farming systems based on ecological principles (Melo et al., 2024). Yet it is precisely this redesign—through diverse crop rotations, cover crops, integrated crop-livestock systems, and managed biodiversity—that rebuilds soil's inherent fertility. Recent European research applying the ESR framework across 170 studies found that redesign-level interventions consistently produced win-win outcomes for both biodiversity and climate mitigation, driven by increased soil carbon storage and microbial biodiversity (Blaix et al., 2026)

The evidence demonstrates that redesign creates self-sustaining productivity: organic farms operating at the redesign level achieve 117% higher net returns per acre while using 50% less energy—not by purchasing different inputs, but by eliminating the input treadmill entirely through ecological design.

Ecological boundaries define the limits of soil nutrient reserves, water availability, beneficial organism populations, and the farm's capacity to buffer against pests and weather extremes without external support. Farming that exceeds these boundaries by extracting more nutrients than natural processes can replenish creates a dependency on external inputs that must escalate over time. **The ESR framework demonstrates that only redesign-level practices—crop rotations, cover crops, integrated crop-livestock systems, agroforestry, and managed biodiversity—can rebuild these ecological capacities.**

Planetary boundaries represent Earth's safe operating space for humanity. Six of nine planetary boundaries are now transgressed, including biogeochemical flows (nitrogen and phosphorus cycles), land-system change, and biosphere integrity. Sustainable yield requires farming practices that work within these environmental limits rather than transgressing them, ensuring long-term food security. Upland Organics' carbon sequestration rate of 1.5 tonnes SOC per hectare annually demonstrates how regenerative organic agriculture—operating at the redesign level—can actively contribute to climate solutions while maintaining productivity.

Canada pioneered the scientific framework for this transition three decades ago. The question now is whether policy will support farmers to move beyond efficiency and substitution to reach the redesign stage—where farms rebuild their inherent productive capacity rather than compensating for depleted soils with ever-increasing inputs.

3. Access to Food

3.1 Reducing the Negative: Food Waste

Second Harvest's October 2024 report reveals that 46.5% of all food produced for Canada is wasted—21.18 million metric tonnes. Critically, 41.7% of total waste is avoidable food that could be redirected to support Canadians facing food insecurity. This avoidable waste has an estimated value of $58 billion.

It identifies three major causes:

Best Before Dates

Best before dates contribute to 23% of the 7.24 million tonnes of avoidable food wasted from processing to purchase. These dates mislead consumers—only foods with shelf life under 90 days require them, yet they appear on almost everything. BBDs serve as general guidelines for freshness, taste and nutritional value, not food safety. Businesses sometimes use BBDs to drive sales, causing consumers to replace perfectly edible food, contributing to waste throughout the supply chain.

Climate Change and Weather Patterns

Changing weather patterns mean more crops are being produced that don't meet retailer quality standards and are wasted in the field. This represents a double whammy loss—resources invested in production are lost, and there is no production for consumption.

Lack of Economic Incentives

Industries lack economic incentives to appropriately manage and process food waste. Yet research shows that by reducing just 1% of their food waste, businesses can boost revenue by 4%. The cost of avoidable food waste equates to 12% of prices paid for food at retail.

The environmental impact to Canada is massive. Food waste accounts for 77.7 million tonnes of CO_2 emissions in Canada, with avoidable waste contributes 25.7 million tonnes. Globally, the food system is responsible for over one-third of human-made greenhouse gas emissions, with food waste contributing 8-10% of global emissions.

According to PROOF (University of Toronto), 38.7% of the Indigenous population aged 15 and over experienced food insecurity in 2023. The paradox is stark: nearly half our food production is wasted while 40% of Indigenous peoples cannot access adequate food.

3.2 Increasing the Good: Infrastructure and Distribution

The Food Policy for Canada's five-year report (2019-2024) demonstrates successful models for improving food access through infrastructure investment and institutional procurement.

Local Food Infrastructure Fund

The $70 million Local Food Infrastructure Fund (2019-2024) approved $65.3 million for 1,112 projects including small-scale equipment and large-scale production and distribution initiatives. Program analysis found that LFIF funding enhanced organizations' ability to offer nutritious, culturally appropriate food to populations facing food insecurity. Recipients reported increases in food availability, volume provided, meals served, and clients served.

National School Food Program as Framework

Budget 2024 committed $1 billion over five years (2024-2029) for a National School Food Program, aiming to serve 400,000 more children. The National School Food Policy emphasizes local, seasonal, and sustainable procurement. Research from comparable countries shows universal free school meals generate 2.5-7 times return on investment in human health and economic benefits.

This framework could be extended to other institutional settings—hospitals, long-term care facilities, prisons, and government cafeterias. Organizations like Nourish Leadership demonstrate how healthcare institutions can implement values-aligned procurement prioritizing local, organic, and sustainable food. Institutional procurement creates stable, predictable markets for farmers while improving food quality for vulnerable populations.

The Canada Organic Action Plan identifies institutional procurement with targets for local and organic food as a key mechanism for market development. Coherent procurement policies turn institutions into anchor customers for organic providing predictable demand for farmers transitioning to sustainable practices.

4. Developing the Consumer Base for Canadian Food

The Problem: Misalignment with Market Values

A successful market aligns with economic, social, and environmental values, both domestically and abroad. When production practices conflict with destination market values—when consumers simply don't want the food being produced—it doesn't matter how much market access exists.

Canadian agriculture faces a fundamental misalignment: while our production system remains heavily dependent on synthetic inputs and pesticides, consumer demand is shifting decisively toward organic and sustainably produced food, particularly among younger generations who represent the future market.

4.1 Domestic Consumers: Increase what they value as Good

The Youth Market Transformation

Canada's organic market reached $9 billion in 2024, growing 11% since 2020 despite economic turbulence and inflationary pressures (COTA, 2024 “Organic Quick Facts”). This growth is driven overwhelmingly by younger consumers whose purchasing decisions reflect fundamentally different values than previous generations.

According to the Canada Organic Trade Association's consumer research, **83% of Canadian millennials (currently ages 30-45) regularly purchase organic food and beverages**—the highest rate of any generation (COTA, 2017). This isn't a passing trend: millennials now represent the largest consumer demographic, and their organic purchasing has increased year-over-year, from 80% in 2016 to 83% in 2017.

The trend intensifies with Generation Z (currently ages 14 to 29 years old), who are now entering their peak earning and purchasing years. International research from the Organic Trade Association's 2024 survey shows that **nearly 90% of Gen Z consumers already purchase organic products**, and they have the strongest commitment to organic of any generation. More critically, **77% of Millennial and Gen Z consumers describe organic as "at least somewhat important" in their purchasing decisions, compared to only 55% of Gen X and Baby Boomer consumers**.

Why Youth Choose Organic: Values-Based Purchasing

Younger consumers choose organic because it aligns with three core priorities: **health** (89% of Gen Z and 85% of millennials purchase for health reasons), **environmental sustainability** (76% of Gen Z consider sustainability important), and **trust in production methods** (food claims like organic are 40% more important to younger generations) These cohorts are willing to pay the premium prices across all income levels—demonstrating that organic is of value to them.

Rejection of GE and Cloned/Synthetic Production: The Canadian Evidence

A critical driver of organic demand is what these products exclude: genetically engineered organisms, cloned animals, and synthetic production methods. Canadian organic standards prohibit all of these—directly addressing overwhelming consumer opposition.

Canadian Consumer Surveys Show Strong GE Rejection

- **83% of Canadians** say they are in favour of mandatory labelling for GM foods (Leger, 2025, commissioned by CBAN and Vigilance OGM).
- **40% of Canadian consumers identify "lack of GMOs" as a key benefit** of organic food (Agriculture and Agri-Food Canada, 2023)
- Agriculture Canada's 2023 consumer survey found that "lack of GMOs" ranks third among benefits consumers seek in organic products, behind only pesticide reduction (59%) and healthiness (47%)

Health Canada's Cloned Meat Retreat: Public Rejection Halts Policy

In November 2025, **Health Canada indefinitely paused its proposed policy to allow meat from cloned cattle and swine into Canada's food supply without labelling or pre-market safety assessment**. The government retreat came after "significant input from both consumers and industry about the implications of this potential policy update"—a polite acknowledgment that Canadians overwhelmingly rejected the proposal.

The proposed policy would have removed cloned meat from the definition of "novel foods," allowing these products to be sold without any disclosure to consumers. Public backlash was immediate and fierce, forcing Health Canada to pause implementation that had been scheduled for Fall 2024.

Vincent Breton, CEO of duBreton (Canada's leading organic pork producer), captured consumer sentiment: "Consumers have the right to decide for themselves. Changing the definition of a novel food means that unless it's labelled organic, there is no way to distinguish brands that support animal cloning—from brands that don't."

Gene-Edited Pigs: Canadians Demand Labelling

The controversy over cloned meat was immediately followed by similar consumer resistance to gene-edited pork. In 2025, the U.S. FDA approved PRRS-resistant pigs modified with CRISPR gene editing, with Canadian approval following in 2026. Consumer response was unequivocal:

- **74% of Canadians are concerned about gene-edited pork in their food supply and demand total transparency** (duBreton consumer survey, 2025)
- Without mandatory labelling, **"consumers cannot be certain the pork they purchase hasn't been altered through genetic engineering"** (duBreton)
- Critically, **gene-editing technologies were NOT included in Health Canada's cloned meat pause**—meaning approval discussions continue "despite clear and overwhelming public concern"

- The Canadian Biotechnology Action Network represents groups across Canada coming out in opposition.

CHFA Survey: Canadians Want Gene Editing Labelled

In October 2025, the Canadian Health Food Association (CHFA) released survey results showing overwhelming consumer demand for gene editing labelling. The national survey of 1,624 Canadians found:

- **Majority of Canadians believe gene editing is a form of genetic engineering and that labelling should disclose its use**
- When asked why labelling matters: **69% cited ability to make informed decisions**, 64% cited honesty in food marketing, 45% cited accountability if issues arise, and 34% highlighted respecting cultural or religious dietary choices

CHFA Director of Regulatory Affairs Ashley Cornell stated: "This research confirms what our members already know: Canadians value transparency and expect integrity in food labelling."

The survey directly challenges current federal proposals to exclude gene editing from the definition of "genetic engineering" for labelling purposes—which would allow gene-edited foods to be marketed as "non-genetically engineered" despite gene editing being a form of genetic engineering.

The Pattern: Canadians Reject GE, Embrace Authentic

The cloned meat retreat, gene-edited pork opposition, and CHFA survey results reveal a consistent pattern: **Canadian consumers want food grown in soil by farmers, not engineered in laboratories by corporations**. They want transparency about production methods. They demand the right to choose what they eat.

This is precisely what organic agriculture offers, and precisely what conventional chemical-intensive agriculture increasingly fails to provide. When over 80% of Canadians want GM foods labelled, 74% are concerned about gene-edited pork, and Health Canada must retreat on cloned meat due to public opposition, the message is clear: Canadians are rejecting the industrial approach to food production.

Comparison: U.S. Synthetic Meat Bans Show Similar Pattern

The Canadian resistance mirrors developments in the United States, where consumer rejection of synthetic and laboratory-produced meat has been even more dramatic. Between 2024-2025, seven U.S. states (Florida, Alabama, Mississippi, Nebraska, Montana, Indiana, and Texas) banned cell-cultured meat sales in response to constituent demands (see state legislative summaries). The plant-based meat industry simultaneously collapsed, with Beyond Meat's revenue declining 30% and its market value shrinking 95% (industry analysis) as consumers rejected highly processed alternatives marketed as "healthier" options.

The Canadian Market Opportunity and Challenge

Ontario's organic market hit $1.141 billion in 2023, accounting for 38% of national organic grocery sales, with particularly strong growth in fresh meat, poultry, and dairy. Households with children spend 19% of their weekly grocery budget on organic items, compared to 12% for households without children—showing that as millennials form families, their organic commitment intensifies rather than diminishes.

Yet **Canada imports an estimated 60-85% of the organic food consumed domestically** (MacRae et al., 2009; COTA estimates). While Canadian consumers spent $9 billion on organic products in 2023, the number of Canadian certified organic producers declined by 2%, processors by 1%, and livestock producers by 3.7% between 2022 and 2024.

The Domestic Misalignment

Canadian agricultural policy continues to subsidize and support a production system built on synthetic inputs and chemical-intensive practices—the very system that younger consumers are actively rejecting, and that Health Canada cannot even permit in its laboratory-produced forms without overwhelming public backlash. We are:

- **Producing food that consumers increasingly don't want:** Only 2.2% of Canadian farms are certified organic, despite organic representing a $9 billion domestic market
- **Importing to meet demand we could supply:** 60-85% of organic food consumed in Canada comes from other countries
- **Losing producers while demand grows:** Organic acreage increased only 0.8% while demand grew 11%
- **Missing the generational shift:** By 2030, Millennials, Gen Z, and younger generations will constitute the majority of consumers—and 77-90% of them prioritize organic
- **Ignoring consumer voice on GE:** 88.6% want GM labelling, 74% oppose gene-edited pork, yet policy continues toward approval without transparency

As COTA Executive Director Tia Loftsgard observes: "The more that it's accessible and available, the more they're going to continue to buy it. We want to make sure that organic food is available to everybody." Yet Canadian policy maintains a system where organic farmers receive minimal support while conventional agriculture—producing food that the next generation actively avoids—receives the bulk of subsidies and research funding.

The Global Competitive Risk

This misalignment creates competitive vulnerability. The United States, European Union, and other trading partners are aggressively supporting organic production to meet documented consumer demand. The U.S. organic market reached $69.7 billion in 2023, with comprehensive USDA organic programs and research support. If Canadian agriculture cannot supply what Canadian (and global) consumers want to buy, we will be displaced by producers who can.

The fundamental question is whether Canadian agricultural policy will align with where markets are going—driven by the values and purchasing power of younger generations who forced Health Canada to retreat on cloned meat and who overwhelmingly demand transparency on gene editing—or continue supporting a production system increasingly at odds with consumer demand. When 83% of millennials and 90% of Gen Z actively seek organic, and Health Canada cannot even introduce cloned meat without public revolt, "business as usual" is a strategy for market obsolescence.

4.2. Foreign Consumers: Decrease what they value as Bad

A successful market abroad aligns with the economic, social, and environmental values of that foreign market, as well as their regulatory requirements. As Canada seeks greater trade relations with middle-power nations, we must ensure our food is both clean and nutritious for these new customer markets. **This will provide us with a competitive advantage over competitors who maintain pesticide-intensive production systems—particularly as Canadian agriculture reduces its dependence on expensive imported inputs from the United States.**

The U.S. Input Dependency Problem

Canadian agriculture's reliance on pesticide-intensive practices creates a double vulnerability: our crops face rejection in foreign markets due to residue concerns, while we remain dependent on the United States for the inputs that create those residues.

In 2024, 86.73% of pesticides imported into Canada came from the USA (Statistics Canada). This dependency extends across agricultural inputs:

- **Fertilizers**: Canada imported US$1.68 billion in fertilizers from the United States in 2024, representing approximately 67% of Canada's total fertilizer imports of US$2.52 billion
- **Overall agricultural inputs**: Canadian agri-retailers and farmers rely heavily on U.S. supply chains for fertilizers, pesticides, and other production inputs

This creates economic vulnerability. When Canadian farmers rely on expensive U.S. inputs to produce crops, then face market rejection because those same inputs leave residues that foreign consumers don't want, Canada loses on both ends: we pay for inputs we don't need, then lose market access because we used them.

Organic and regenerative production systems break this dependency

By rebuilding soil health and working within ecological systems, these approaches dramatically reduce—or eliminate—reliance on purchased inputs. This provides the dual competitive advantage of lower production costs through reduced input purchases, and premium market access to consumers demanding clean food.

As documented above, organic farming provides 117% higher net return per acre despite transition costs, driven by both premium prices AND reduced input costs from eliminating synthetic fertilizers and pesticides.

Vulnerability of Canada's Reputation

As Warren Buffett said, "It takes 20 years to build a reputation and 5 minutes to ruin it. If you think about that, you'll do things differently." Canada's reputation is vulnerable.

Canadian Lentils Recalled in France (December 2025)

French retailers recalled Canadian lentils after an investigation by France 5 network journalist Hugo Clément found glyphosate and diquat pesticide residues in Canadian lentils sold in major grocery stores. While glyphosate levels fell below EU thresholds—which were raised in 2012 under Canadian pressure during free trade negotiations—the EU banned diquat in 2019 and heavily restricts glyphosate use. **France prohibits pre-harvest application of glyphosate specifically because it leaves excessive residues on crops.**

Canada is France's largest lentil supplier. Canadian lentils represented 57% of France's lentil imports in 2024. As European demand for plant proteins expands in ready-to-eat meals and new food products, this market rejection threatens major growth opportunities. Canada exports approximately $4 billion in pulse crops annually to over 130 countries.

The controversy demonstrates how Canada's reliance on pesticide-intensive practices—particularly pre-harvest glyphosate application that is banned in France and much of Europe—creates ongoing trade vulnerabilities even when residues technically comply with Canadian MRLs.

Canadian Wheat Rejected in Italy (2017-2020)

Italy dramatically reduced Canadian durum wheat purchases between 2017-2020 due to glyphosate concerns. **Barilla, the world's largest pasta maker, cut Canadian imports by 35% in 2018 and stopped signing new contracts**. Barilla's purchasing director Emilio Ferrari told Canadian grain groups that despite Canadian durum being "of exceptional quality," consumer fears about glyphosate contamination forced the company to source from countries like Russia where pre-harvest glyphosate is not applied.

Italian testing in 2020 found glyphosate in 7 of 20 pasta brands, with 6 made from non-EU wheat likely from Canada.

Canadian durum exports to Italy fell from 522,000 tonnes (2016-17) to 283,300 tonnes (2017-18)—a 45% decline. The drop coincided with Italy's "Made in Italy" country-of-origin labelling requirements implemented in 2017.

Although **Italy's labelling law was quietly reverted in December 2021** and **Canadian durum imports to Italy resumed, reaching 1.1 billion kilos (of 2.5 billion total imports) by the end of 2020**—returning to 2016 levels—the episode demonstrates that export market success requires alignment between production practices and consumer values, not just regulatory compliance. Italy cannot produce sufficient durum domestically yet initially chose to forgo Canadian supply rather than

accept glyphosate residues that alarmed consumers, even though those residues were within legal limits.

Japanese Concerns Over Wheat Glyphosate (Ongoing)

Japan, one of Canada's largest wheat customers, has expressed ongoing concern about glyphosate in imported wheat. The Japanese Ministry of Agriculture, Forestry and Fisheries reported that **90% of U.S. wheat imports and an even higher percentage of Canadian wheat imports contain glyphosate residues**, mainly due to pre-harvest spraying practices.

Japanese consumer groups and parliamentarians have raised alarms about glyphosate in bread made from imported wheat. Studies by the Japan Family Farmers Movement (Nouminren) found **glyphosate in many breads made with imported wheat, but no residue in bread made with Japanese wheat** (which represents only 14% of consumption).

In 2018, Japan temporarily suspended Canadian wheat imports after GMO wheat was discovered in Alberta—demonstrating Japan's sensitivity to food safety and production method concerns. While the suspension was brief (resolved within months), it highlighted the market risk Canada faces when production practices diverge from consumer values in key export markets.

Current Context: Legumes for India

India represents a critical growth market for Canadian pulses. India's glyphosate MRLs are generally aligned with international standards: **5 ppm for peas and lentils, but only 2 ppm for beans (which includes chickpeas under Indian classification).**

Canada's current MRLs are 5 ppm for peas, 4 ppm for lentils, and 4 ppm for beans/chickpeas. In 2021, **Canada proposed increasing glyphosate MRLs on peas to 10 ppm and lentils to 10 ppm** (up from 5 ppm and 4 ppm respectively). The proposal was paused due to public outcry—**nearly 20,000 Canadians expressed opposition** (Safe Food Matters, 2022).

This pause bodes well for maintaining market access to India for peas and lentils, as Canadian MRLs remain compatible with Indian requirements. However, **trade problems may arise for beans and chickpeas**, where Canada's 4 ppm limit could result in residues exceeding India's 2 ppm threshold, particularly when pre-harvest glyphosate is used.

In November, 2025, Canada announced a Canada-India Comprehensive Trade Partnership Agreement, and Prime Minister Carney is expected to visit India in March 2026. Ensuring Canadian pulse crops meet Indian MRLs—and avoiding residues that could jeopardize this expanding trade relationship—is critical as Canada seeks to deepen economic ties with India.

The Pattern: Clean Food as Competitive Advantage

These cases demonstrate that export market success requires alignment between production practices and consumer values. Canada's reliance on pesticide-intensive practices creates trade vulnerabilities even when residues comply with Canadian MRLs.

Practices come under the microscope as well. Pre-harvest glyphosate application is banned or restricted in major markets. Desiccation is banned in Europe, and pre-harvest application on field vegetable crops is effectively banned for weed control (there is a 60-day pre-harvest interval).

More critically, this reliance locks Canadian farmers into purchasing expensive inputs (86.73% of pesticides from the U.S.) that reduce their competitiveness on two fronts:

1. **Higher production costs** from input dependency
2. **Market rejection** when those inputs leave residues foreign consumers reject

Organic and regenerative systems provide the inverse benefit: lower costs through reduced inputs, and premium market access through clean food production.

As Canada expands trade with middle-power nations and seeks competitive advantages in global markets, producing clean, low-residue food aligned with destination market values becomes a strategic necessity—not merely a regulatory compliance exercise, but an economic imperative that simultaneously reduces input costs and opens premium markets.

4.3 The Opportunity: Organic Market Development

Canada faces a critical market paradox documented in the Canadian Organic Growers' Organic Task Force report "*Cultivating the Organic Opportunity for Canadian Farmers and Consumers*" (September 2025).

Market Size vs. Production Gap

In 2023, Canada's organic market was valued at $9.01 billion, making it the fifth largest globally. Organic food and beverage sales reached $7.18 billion, growing 10.1% since 2020. Consumer trust in organic labels increased from 27.6% in 2019 to 33.7% in 2023, with 59.3% of consumers willing to pay premiums for organic products.

Yet during this period of surging demand, certified organic operators fell by 2% to 7,558 in 2023. Between 2021-2024, Canada lost 3.7% of organic operators. This growing production gap means increasing imports, fewer Canadian organic products for consumers, and missed opportunities for farmers.

This misalignment creates competitive vulnerability. The United States, European Union, and other trading partners are aggressively supporting organic production to meet documented consumer demand. The U.S. organic market reached $69.7 billion in 2023, with comprehensive USDA organic programs and research support. If

Canadian agriculture cannot supply what Canadian (and global) consumers want to buy, we will be displaced by producers who can.

Investment Gap

Canada dramatically underinvests compared to competitors:

• United States invests 8× more per acre in organic agriculture
• European Union invests over 200× more per acre

This investment gap translates directly into lost market share. As domestic production stagnates, imports fill Canadian demand while export opportunities grow in global markets increasingly focused on sustainable production.

Economic Benefits for Farmers

The Task Force Report documents comprehensive economic and environmental benefits of organic farming based on Canadian research and farm-level data:

Financial Returns

Crop budgets and rotation analysis show organic crops are, on average, **117% more profitable than conventional farming** despite high short-term transition costs. This superior profitability stems from multiple factors:

- **Reduced input costs** from eliminating synthetic nitrogen fertilizers and pesticides
- **Premium prices** that offset potential yield reductions
- **Up to 50% less energy use** and **40% greater energy efficiency** compared to conventional operations
- **Lower dependency on volatile commodity markets** through diversified crop rotations

Overcoming the Transition Barrier

However, the transition period remains a significant obstacle to organic adoption. The Task Force economic analysis found that most return values are negative during the 3-year **transition period**, creating financial stress for farmers attempting to convert. During this period, farmers face:

- Lower yields as soil biology rebuilds
- Inability to command organic price premiums until certification is achieved
- Increased labour and management costs for weed control and fertility management
- Loss of established conventional marketing relationships

This economic valley requires **financial support to bridge the gap**, particularly for new entrants and smaller operations with limited capital reserves.

Huge Return on Investment

The Task Force estimates that a **$68.5 million annual public investment** could triple organic acreage across Canada, generating **$1.73 billion in new net farm income over 10 years**—representing an almost **8:1 return on investment**. This calculation accounts for:

- Transition support payments to offset negative returns during conversion
- Extension services and technical advisory programs
- Research to optimize organic production systems
- Market development and processing infrastructure

As Katie Fettes, COG Director of Policy and Research, noted: *"This report is showing if that investment was made, that would return $1.73 billion in additional net farm income and significant return for every dollar spent on transition."*

Environmental Co-Benefits

Beyond farm profitability, the Task Force documented significant environmental advantages:

- **35% reduction in greenhouse gas emissions per acre**
- **15% reduction in emissions per unit of production**
- Maintained or improved **soil organic carbon** compared to conventional systems
- **Greater biodiversity** in plants, insects, and birds
- Enhanced **climate resilience** through frequent use of green manures, cover crops, and on-farm habitat retention

Export Success Stories

Despite challenges, Canada's organic exports reached $684.6 million in 2023, up from $557 million in 2022. Quebec led with 47% of export value, driven by a 131.9% increase in maple syrup exports (34.9% of total organic exports). This demonstrates market appetite for Canadian organic products when production capacity exists.

Canada successfully navigated new policy requirements including:

• Revised equivalency arrangement with Japan incorporating alcoholic beverages

• New Canada-South Korea equivalency arrangement (October 2023)

• Pilot project for USDA's Strengthening Organic Enforcement Rule

These achievements demonstrate Canada's capability to meet international organic standards. The challenge is scaling domestic production to capture market opportunities.

Case Study: Upland Organics - Scaling Organic Production

Upland Organics, a certified regenerative organic farm near Wood Mountain, Saskatchewan, provides compelling evidence that organic and regenerative practices can achieve commercial-scale productivity with measurable environmental and economic benefits. Operated by Allison Squires (PhD in Toxicology, University of

Saskatchewan) and Cody Straza (Agricultural Engineer, University of Saskatchewan), the farm has grown from 2,000 acres in 2010 to approximately 8,500 acres today, producing organic pulses (including lentils), cereals, oilseeds, and running a commercial cattle herd.

Extreme Climate Challenges: Located in the Palliser Triangle—a semiarid region of Western Canada in extreme drought since 2017—Upland Organics operates on loam/sandy loam soils receiving only 12-14 inches of rain in non-drought years. Despite these harsh conditions, the farm has not only survived but thrived through soil-focused management including reduced tillage, a diverse 10-year crop rotation incorporating perennial and annual cover crops, intercropping, pollinator strips, composting, and adaptive multi-paddock rotational grazing with cattle.

Quantified Soil Health Gains: After more than a decade of regenerative practices, routine soil testing reveals remarkable improvements:

• **1% average increase in soil organic matter (SOM)** across the farm (now totalling approximately 3% SOM)

• Each 1% increase in SOM allows soils to hold an additional **25,000 gallons of water per acre**—critical for drought resilience

• **1.5 tonnes of soil organic carbon (SOC) sequestered per hectare annually**—considerably above the 0.2 tSOC/ha/yr rate for Prairie no-till alone, contributing significantly to climate change mitigation

• Increased soil aggregation and stability, measured consistently over a decade

Energy Efficiency Achievements: According to the Saskatchewan Farm Energy Evaluation Program, Upland Organics uses **25-30 Equivalent Liters of Diesel per Tonne (ELDT)** of grain produced—**significantly below the provincial average of 75 ELDT**. This means the farm uses approximately one-third the energy and produces one-third the climate impact of the average Saskatchewan grain operation, while achieving higher profit margins through reduced input costs.

Integrated Pest Management Without Pesticides: Facing grasshopper outbreaks in 2022 and 2023, the farm successfully managed pests through crop rotation adjustments (favouring peas, chickpeas, and awned cereals less attractive to grasshoppers), strategic crop placement, enhanced plant Brix levels (sugar content) through soil health that renders crops less digestible to pests, and maintenance of approximately 3,600 acres of wild areas, native prairie, and tame grass that support beneficial insects and natural pest regulators.

Innovative Biological Systems: The farm creates its own soil amendments including vermicompost tea used for seed treatments. Seeds soaked in compost tea germinate several days earlier and grow more vigorously due to beneficial microorganisms that improve plant access to nutrients and water. Cattle graze cover crops at high stocking densities in tight paddocks with frequent moves, efficiently cycling nutrients while trampling uneaten forage into natural mulch that protects soil from sun and wind, minimizes evaporation, regulates temperature, and prevents erosion.

Long-term Vision: Allison and Cody have set a long-term goal of increasing soil organic matter to 5-8% by the time they pass the farm to the next generation. As

Allison states: "Everything we do today not only affects us, but the future generations of farmers yet to come. Boosting soil health isn't just about today's crops; it's about securing our farm's future. Soil health mitigates risk on our farm by boosting water retention, nutrient availability, and disease resistance."

Recognition: The farm's achievements have earned multiple national awards including Canada Organic Trade Association Organic Farmer of the Year (2022), Canadian Outstanding Young Farmers (2022)—the first organic farmers to win this award—SaskOrganics Outstanding Organic Farmers (2021), Canadian Farmer-Rancher Pollinator Conservation Award (2018), and bee-friendly farming certification as one of the first large-acre farms in Canada.

Upland Organics demonstrates conclusively that organic lentil and pulse production can achieve commercial scale, environmental regeneration, climate mitigation, and economic viability simultaneously—even under extreme drought conditions. (Full farm profile: Sustainable Agriculture Solutions; Pivot and Grow; Globe and Mail)

5. Recommendations

Based on this analysis, Safe Food Matters Inc. recommends the Standing Senate Committee on Agriculture and Forestry support the following measures:

Food Quality

1. Prohibit pre-harvest application of glyphosate and other pesticides used pre-harvest on food crops, aligning Canada with European standards and protecting export market access.

2. Improve the pesticide risk assessment process of Health Canada's Pest Management Regulatory Agency, ensuring regulations reflect evolving science on health and environmental impacts and look at the real-world effects of pesticide products in combination with our exposure to other chemicals on our body burden.

3. Support farmers transitioning from chemical use through investment in agronomic research, variety selection, and harvest management alternatives suited to Canadian climates.

Food Access

4. Address food waste through standardized best before date labelling, infrastructure for surplus redistribution, and economic incentives that make waste reduction profitable for businesses.

5. Extend the National School Food Program procurement framework to hospitals, long-term care facilities, prisons, and government institutions with targets for local and sustainable sourcing.

6. Expand the Local Food Infrastructure Fund to support regional food hubs providing aggregation, processing, storage, and distribution connecting local producers with institutional buyers.

Consumer Market Development

7. Implement a comprehensive Canada Organic Action Plan with federal investment matching international competitors, including production incentives and transition support addressing short-term negative returns, research and extension services on organic farming practices, and market development initiatives supporting domestic and export opportunities.

8. Establish federal procurement policies requiring minimum percentages of organic and locally produced food, leveraging the $9.01 billion market to build stable demand for transitioning farmers.

9. Create early warning systems identifying pesticide-related market access risks, enabling proactive farmer support before trade conflicts emerge.

6. Conclusion

Food security calls for safe, uncontaminated, desirable, nutritious, culturally appropriate food accessible to all Canadians. The Food Policy for Canada envisions a food system that 'is resilient and innovative, sustains our environment and supports our economy.' We have some work to do.

We waste 46.5% of food produced while 38.7% of Indigenous peoples experience food insecurity. We are the world's 5th largest organic market yet lose 3.7% of organic operators as demand surges. Our crops are rejected because foreign consumers don’t want pesticide residues.

A good plan aims to achieve social, economic and environmental benefits. The path forward is clear: reduce contamination while building soil health; reduce waste while improving distribution; avoid production that misaligns with market values while capturing the huge organic opportunity. These objectives reinforce each other. Farmers eliminating pre-harvest pesticides access premium markets. Institutional procurement creates stable demand for transitioning farmers. Better soil health reduces input costs and climate vulnerability.

Upland Organics demonstrates that commercial-scale organic production is achievable with measurable results: 1% soil organic matter increase enabling 25,000 additional gallons of water retention per acre, 1.5 tonnes of carbon sequestration per hectare annually, and energy use one-third below provincial averages. Their success scaling to 8,500 acres while weathering extreme drought shows the viability of the organic model when farmers have proper support and market access.

Canada should lead the transition and not allow our market share to erode as competitors capture growing demand for sustainably produced clean food. The evidence shows markets increasingly reward clean food grown in ways that align with social, environmental, and economic values.

There is a huge opportunity and a game plan for organics. It should be supported. This is not just good environmental policy or good health policy—it is good economic policy that strengthens Canadian agriculture's long-term competitiveness.

Thank you for your consideration of these submissions.

Mary Lou McDonald
President, Safe Food Matters Inc.