



AGRITECHNOLOGY IN BRITISH COLUMBIA & THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

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SUMMARY

This policy brief provides a short history of agritech (or 'agritech') in British Columbia and its purported links with the United Nations' Sustainable Development Goals (SDGs). Provincial support for agritech initiatives has led to unprecedented changes to farmland protection regulations, a re-imagining of the concept of regenerative agriculture as well as what a farmer is and how they labour. Justification for agritech policy and funding appears absent and the assumption that it can combat climate change remains unproven. This argument echoes those of other researchers in the province who have raised concerns that an agritech-focused food system in British Columbia has limited capacity to meaningfully achieve desirable food system outcomes¹. We recommend the province conduct transparent ecological, economic and social impact analyses of agritech.

INTRODUCTION

In the midst of our world today, a so-called fourth global agricultural revolution has been christened by some to be a "revolution in digital agritech."² This revolution is said to carry the potential to change

the modern food economy and has set its sights on all imaginable aspects of production - from planning, planting, growth, harvesting, and pollination to distribution. In British Columbia (Canada), various types of agritech are being promoted through government communications and subsidized through the Investment Agriculture Foundation via the Agritech Ramp-up Program and Agritech Concierge Program.

The continuation and escalation of negative effects of global climate change in combination with a growing world population have led to a general consensus in the scientific community that we have but three decades – until 2050 – to adjust unsustainable agricultural production methods.³ Our time has been called one of deep institutional breakdown⁴, marked by environmental degradation, cataclysmic biodiversity loss, global pandemics, rising wealth inequality and war, followed by famine. The pressure builds and concern is mounting. Since 2015, the UN's Sustainable Development Goals (especially Target 2.4) have attempted to encourage nations to implement agricultural practices that maintain ecosystems and promote resilience to climate change.

AGRITECH IN BRITISH COLUMBIA

The provincial government of British Columbia commissioned a Food Security Task Force (FSTF) in 2019 to support "...the development and application of technologies that can protect the agricultural sector against the effects of climate change and support environmentally sustainable agricultural practices."⁵

¹ All academic articles and sources not available online are cited. Publicly available sources are hyperlinked in text. Hansen, E., N. Robert, M. Bomford, R. Harbut, and K. Mullinix. [Response to the Findings & Recommendations of the B.C. Food Security Task Force](#) (Richmond, British Columbia: Institute for Sustainable Food Systems, Kwantlen Polytechnic University, 2020).

² Mottram, Toby. "Sustainable Food: The Role of Digital Agritech", in *Smart Cities: Critical debates on big data, urban development and social environmental sustainability*, ed. Negin Minaei (Boca Raton: CRC Press, 2022), 57-77.

³ Berners-Lee, M., C. Kennelly, R. Watson, and C. N. Hewitt. "Current Global Food Production is Sufficient to Meet Human Nutritional Needs in

2050 Provided there is Radical Societal Adaptation." *Elementa* 6, no. 1 (2018): 1-14.

⁴ Hughes, Ian, Edmond Byrne, Markus Glatz-Schmallegger, Clodagh Harris, William Hynes, Kieran Keohane, and Brian Ó. Gallachóir. "Deep Institutional Innovation for Sustainability and Human Development." *World Futures* 77, no. 5 (2021): 371-394.

⁵ FSTF (B.C. Food Security Task Force), [The Future of B.C.'s Food System: Findings and Recommendations from the B.C. Food Security Task Force](#) (British Columbia, 2020): p.9.

The FSTF defined agritech as “the use of technology and technological innovation to improve the efficiency and output of agricultural production.”⁶

Examples of agritech include robotic milkers, computer-controlled harvesters, and cellular grown meat. Their mandate from government was to provide recommendations on how to apply agri-technologies, grow the emerging agritech sector, and support the reduction of greenhouse gases (through the adoption of technologies).

The future of agriculture was framed technologically in the task force’s [final report](#) and the farmer re-imagined as an urban biotechnician. The ‘farmer of the future’, it is written, “...lives in a mid-rise co-op built of engineered timber [and] starts her morning early with breakfast at a coffee shop up the street, [before]... she rides the Skytrain to one of the large agritech innovation centres in Surrey [where] she is working on a breeding program to create more resilient berry varieties for B.C. growers [and] analyses the data from her latest trials.”⁷ The task force further recommended the adoption of the United Nations’ SDGs in future agricultural policies and proposed that the province invest in agricultural technologies and the commercialization of those technologies to address the SDGs.

AGRICULTURAL LAND PRESERVATION IN BRITISH COLUMBIA

In British Columbia, the [Agricultural Land Reserve](#) (ALR) is a provincial zoning classification that is intended to preserve agricultural land for the future. The Agricultural Land Commission (ALC) acts as an administrative tribunal and adjudicates on land-use applications in the ALR. Only land considered to have the best soil for agriculture is zoned within the ALR. In 2022, soon after the government decided to invest in agritech, it changed longstanding [agricultural land use regulations](#) without [public consultation](#) in order to allow the building of vertical farming warehouses by agritech companies within the ALR.

This change is historically unprecedented. When the Reserve was established in 1973, the ALC’s First Annual Report was clear regarding permissible alternative uses of agricultural land in the province: “The test is whether

or not the proposed use irreversibly affects the agricultural productivity of the land.”⁸

The land set aside in this zone was to be used “...for bonafide farm purposes as well as certain other uses which are compatible with the preservation of land for farm use.”⁹ The ALC stated that the legislation as written had the objective “to protect the agricultural resource in the long haul, hence, short-term economic or technological consideration must be given relatively little weight in evaluating whether a given parcel of land should be included or excluded from the ALR.”¹⁰

AGRITECH OR REGENERATIVE AGRICULTURE

After the task force’s report, the [province launched a Regenerative Agriculture and Agritech Advisory Group](#) in 2021 to “... help ensure farmers have the support to combine new agritech with regenerative agricultural practices to create a more secure food system”. The contradiction contained within this project may be unapparent to those unfamiliar with what regenerative agriculture actually is. In reality, since the 1980s, the [Rodale Institute \(USA\)](#) has led work on regenerative agriculture as a practice and set of principles. Globally, and following Rodale Institute’s lead, regenerative agriculture has been defined as a set of principles that rehabilitate or regenerate ecosystems on farms.

This is achieved through soil-based practices such as diversifying crop rotations, planting cover crops, using green manures, integrating crops and livestock, reducing tillage frequency, and eliminating synthetic chemicals.¹¹ Over forty years ago, Rodale Institute’s Farming Systems Trial was established to quantify the effects of long-term organic cropping systems and tillage practices. Scientific research demonstrating the superior nutrient qualities of food produced from organic agriculture continues to be published.¹² Beyond this, the Rodale Institute also has a [farmer training program](#) which is meant to teach the next generation of farmers. Participants in this program work outside, under the hot sun, with their hands feeling the soil and their eyes aware of distant changing weather on the landscape. During their internship, they receive free vegetables rather than caffè lattes and commuter train passes.

⁶ FSTF, 2020, p.9.

⁷ FSTF, 2020, p.8.

⁸ BCPLC (British Columbia Provincial Land Commission). Annual report 1973-74 (Burnaby, BC: Provincial Land Commission, 1974): p.6.

⁹ BCPLC, 1974, p.4.

¹⁰ BCPLC, 1974, p.5.

¹¹ Jeff Moyer, Andrew Smith, Yichao Rui, Jennifer Hayden.

[Regenerative Agriculture and The Soil Carbon Solution. Kutztown, PA: Rodale Institute, 2020: p.12.](#)

¹² Omondi, Emmanuel Chiwo, Marisa Wagner, Atanu Mukherjee, and Kristine Nichols. “Long-Term Organic and Conventional Farming Effects on Nutrient Density of Oats.” *Renewable Agriculture and Food Systems* 37, no. 2 (2022): 113-127.

For the Rodale Institute, regenerative agriculture is positioned in direct opposition to industrial farming which is described as a system “...built on high capital expenses, proprietary inputs, seeds purposefully designed to work only in tightly controlled chemical regimes, and on scales reliant not on eyeballs and acres...”¹³ A farm with a “Regenerative Organic Certified” label must meet certain standard practices related to soil health. including the absence of soil-less systems and synthetic inputs. Companies that practise indoor vertical farming and have received an agritech [Business Development Grant](#) from the Government of British Columbia have therefore no relation to regenerative agriculture theory or practices.

THE UN SDGs & TECHNOLOGY

Part of the task force’s recommendations were that the British Columbia government “endorse the SDGs and collect and disseminate appropriate information to policy-makers at all levels of government so that the SDGs guide future strategy and policy development as it pertains to agriculture, agritech and related climate policies.”¹⁴. Their [final report](#) argued that novel technologies could address SDG 2 (Zero Hunger), SDG 13 (climate change) and SDG 12 (Sustainable Consumption and Production). At the same time, the Government of Canada’s proposed submission to the UN Food Systems Summit Process, [Canada’s National Pathways](#), has stated that its plan is “...grounded in initiatives to help us do more and act faster, to advance the 2030 Agenda for Sustainable Development adopted by all UN Member States in 2015.” The centrality of United Nations’ SDGs and guidance in Canadian food policy cannot be denied. However, it must be asked: are the SDGs being used to legitimize policies that do not align with their original intentions? The United Nations Rapporteur on the Right to Food made it clear that the realization of the SDGs requires an assurance that everyone’s political, social, and cultural rights will be integrated into policy. For instance, the intention of SDG Goal 2 (Zero Hunger), is arguably *not simply* feeding everyone. Rather this target should also promote “...agricultural productivity and the incomes of small-scale producers, guaranteeing access to resources for women, indigenous peoples, family farmers, pastoralists and fisherfolk.”¹⁵

¹³ [Rodale Institute, 2020, p.28.](#)

¹⁴ FSTF, 2020, p.10.

¹⁵ UN Rapporteur on the Right to Food, “[Critical perspective on food systems, food crises and the future of the right to food](#)” *United*

The promotion of agritech is in line with the Green Revolution (sometimes called the Third Agricultural Revolution) which began in the 1960s and applied the theory that our food system can be positively transformed through technological innovation. During that period, technologies increased yields, but at the cost of increased land consolidation, high debt levels (as farmers are forced to buy newly developed chemicals and fertilizers for each crop), and the rapid loss of groundwater – all while global hunger has persisted. The substantial social and ecological tragedies that accompany many technological ‘gains’ cannot be discounted. The [Bhopal Disaster of 1984](#) should never drift far from our hearts or minds. As the UN Special Rapporteur on the Right to Food reminded us in 2020 “...an excessive focus on increasing production encourages a reliance on technology that inflicts major environmental damage and exacerbates social inequalities. Currently, increasing digitalization and dematerialization of agriculture has the potential to dispossess local knowledge, workers and production processes, with the effect of concentrating power in the hands of large corporate agribusiness operations, while disempowering local producers and consumers.”¹⁶

RECOMMENDATIONS: TRANSPARENT ECOLOGICAL, ECONOMIC AND SOCIAL IMPACT ANALYSES

To ensure a future food system based on egalitarian principles, we recommend the government carry out transparent ecological, economic, and social impact analyses of agritech. At minimum, the following should be considered:

- Carbon accounting calculations (which include GHG emissions involved in a given technology’s creation, not just operation) that demonstrate how an agritech industry will reduce overall GHG emissions.
- The nutritional differences in food grown in a warehouse under artificial lights without soil versus food grown outside, under sunlight and in soil.
- The totality of estimated financial repercussions to farmers who cannot adopt technologies and are pushed out of the competitive market.
- Evidence that our food supply will not be further consolidated and concentrated in the hands of a few (instead of the many) as production

Nations General Assembly. Human Rights Council’s 43rd session, A/HRC/43/44, 2020): p.5/6.

¹⁶ UN Rapporteur on the Right to Food, 2020, p.18.

technologies reduce costs and push small producers out of the marketplace.

- How equitable access for producers is ensured if a technology is proprietary and/or expensive.
- The totality of public subsidies and tax waivers, per annum and in aggregate, given to agritech companies.
- The inflationary impact on the cost of property in the Agricultural Land Reserve caused by the permitting of commercial agritech buildings on farmland.
- How new technologies impact farmers' autonomy, relationships among farmers, and relationships between communities and farms.
- The impact of agritechnology on First Nations' historical and current food production cultures and practices.
- The social, psychological, and cultural consequences of discounting the plant, animal, and mechanical knowledges (including traditional ecological knowledge) carried by older farmers.