



Squamish CAN

Climate Action Network

Project Proposal

Squamish CAN Community Farm

Located on Unceded, Ancestral, and Traditional Coast Salish Territory (Squamish, BC)

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¹ See <http://www.gloriousorganics.com/> for more information.

² See <http://ediblegardenproject.com/loutet-farm/> for more information.

³ See <http://www.kpu.ca/tfnfarm> for more information.

⁴ See <https://freshroots.ca/> for more information.

⁵ See <https://www.richmondfoodsecurity.org/> for more information.

⁶ See <https://www.farmfolkcityfolk.ca/> for more information.

⁷ See <https://haliburtonfarm.org/> for more information.

⁸ See <https://21acres.org/> for more information.

⁹ See <https://solefoodfarms.com/> for more information.

¹⁰ See <https://anvfarm.org/> for more information.

¹¹ See <https://lovenorthernbc.com/community/lillooet/business/amlec-organic-limited/> for more information.

Purpose of Project Proposal

This report presents the proposal of development for the Squamish CAN Community Farm (CAN Farm) project. It serves to inform potential funders and partners about the rationale and the economic, social, and environmental value of the CAN Farm project through the activation of land in productive uses.

Intended Audience

- Squamish CAN and Squamish Food Policy Council
- Squamish CAN Community Farm Committee
- District of Squamish
- BC Ministry of Agriculture
- Potential sponsors (eg. Environment Climate Change Canada, Government of BC, Union of BC Municipalities, Vancouver Coastal Health, Vancity, etc.)
- Potential supporters (e.g Young Agrarians, Good Food Organization, Community Food Centres Canada, etc.)
- Farmers (new entrants to farming and existing farmers)
- Educators
- Community members interested in sustainable, organic farming
- Others (First nation groups, universities, School District 48 - Sea-to-Sky, Squamish restaurants/grocery stores, neighbours of the Squamish CAN Farm)

Report Overview

Part 1 of this report (“The Problem”) profiles the vulnerable state and harmful environmental, social and economic impacts of contemporary industrial-capitalist agriculture and existing food systems.

Part 2 of this report presents research findings that propose “food sovereignty” as an effective response framework to address problems posed by industrial agriculture and food systems. Community farms foundation themselves off of food sovereignty narratives, making them an effective response to global food systems facing extraordinary challenges.

Part 3 of this report proposes the Squamish CAN Community Farm (CAN Farm) project model. This section goes into depth on the proposed approach to achieve the two objectives of the project - Objective #1: Engage Squamish Youth Through Agriculture, and Objective #2: Support New and Existing Farmers through Incubator Plot Program. This section goes on to profile additional concept components of the CAN Farm project model.

Part 4 of this report highlights the conclusions (opportunities and challenges) and next steps for the CAN Farm project.

Part 1. The Problem

Over the past fifty years, global agricultural production has undergone intensive changes to support industrial-capitalist food production, leading to concentration in all areas of the food system, (Foley et al., 2011, Lengnick, 2015). Industrial concentration trends of *consolidation*¹² and *vertical integration*¹³ erode food system resilience (Lengnick, 2015).

All areas of the food system continue to develop more efficient methods of land, labour and resource use to maximize profits. For example, food is increasingly being grown on large corporate farms. Meanwhile, more food as commodity items are being sold in the open market. Also, industrial agriculture has increased use of agrochemicals, and labour is becoming more mechanized. Although these changes have led to higher crop and livestock yields, they have also brought ecological degradation, social injustices, and food insecurity (Born & Purcell, 2006). These negative effects produced by industrial-capitalist food production are referred to as negative externalities, because their costs are not factored into market prices (Tegtmeier & Duffy, 2004).

“ENVIRONMENTAL” HARMS OF INDUSTRIAL AGRICULTURE

Although agricultural production has successfully increased in the last decades, several decades of research have found that industrialized agriculture has caused extensive environmental damage. Large-scale agricultural production systems use land-use practices that are negatively affecting the environment by depleting and degrading natural resources, reducing biodiversity and degrading the climate on a global scale, for short term profit gains (Foley et al., 2011; Kessler & Moolhuijzen, 1994). For example, industrialized agriculture is the largest consumer of freshwater (using 70% of annual global water resources¹⁴), due to production processes, like irrigation (Foley et al., 2005; Gleick et al., 2009). High water use demands of agriculture has drained waterways, resulting in soil degradation and desertification (Ma et al., 2003). Agriculture water demands vary from region to region, but demands are particularly high in arid and semi-arid regions (Chmielewski, 2007). Climate change will likely cause extensions to arid and drought-prone areas, making agriculture particularly vulnerable in these regions (Chmielewski, 2007). Other environmental negative externalities result because industrialized agriculture practices generally require intensive use of external inputs (use of non-renewable resources: fertilizers, pesticides, fossil fuels) (Kessler & Moolhuijzen, 1994). High use of chemical fertilizers and pesticides can lead to soil toxicity, reduced biodiversity, and pollution (Kessler & Moolhuijzen, 1994).

¹² The concentration across one sector of the food system. For example, when one processing business purchases another processing business.

¹³ The concentration across different sectors in the food system. For example, when a company purchases businesses that provides inputs for livestock production, as well as businesses that handle livestock processing and distribution (Lengnick, 2015)

¹⁴ Chmielewski, 2007; FAO, 2002; WRI, 2005

A second dire consequence of industrialized agriculture is the rapid increase in agricultural land salinization due to a variety of reasons, including low precipitation, high surface evaporation, weathering of native rocks, irrigation with saline water, poor drainage conditions and poor irrigation practices (Shrivastava & Kumar, 2014). It is estimated that 20% of all cultivated land and 33% of irrigated agricultural land throughout the world is heavily salinated (being one of the most devastating environmental stresses on agriculture), causing reductions in cultivated land area, crop production and quality (Shrivastava & Kumar, 2014). Furthermore, salinated farm areas are increasing by 10% annually, and are expected to worsen with climate change (Reaping the Benefits, 2009); especially in arid and semi-arid regions (Shrivastava & Kumar, 2014). It is estimated that more than 50% of all arable land, worldwide, will be salinated by 2050 (Jamil et al., 2011).

INDUSTRIAL AGRICULTURE'S CONTRIBUTION TO CLIMATE CHANGE

Industrial agriculture is also a major consumer of fossil fuels and contributor to greenhouse gas (GHG) emissions. In fact, industrial agriculture is the second largest contributor to greenhouse gas emissions worldwide (IPCC OR Smith et al., 2014). According to a United Nations Framework Convention on Climate Change (UNFCCC) (2013) report, Canada's agriculture sector emitted 75 Mt carbon dioxide; 10% of Canada's total carbon dioxide emissions for that year (not including the emissions contributed by the transportation of foodstuffs (UNFCCC, 2016). In BC, the agriculture sector is responsible for 3% of the province's total annual greenhouse gas emissions - approximately 2 million tonnes of CO₂ gas emissions annually (Ministry of Environment, 2014). Both industrial agriculture and food systems emit enormous quantities of GHG, which contribute directly to climate change by trapping heat in the atmosphere. The global community, including agriculture, can expect to continue experiencing the accelerating and intensifying effects of climate change (Lengnick, 2015).

Climate systems are extremely sensitive to increased levels of GHG in the atmosphere. Between the early 1990's and 2016, the number of globally reported extreme climate-related disasters, such as extreme heat, droughts, floods and storms, has doubled, averaging 213 disasters per year (FAO, IFAD, UNICEF, WFP & WHO, 2018). Trends of increasing climate-related disasters are also noticeably closer to home. In BC, there has been a noticeable increase in droughts, heat waves and forest fires over the past decades. For instance, the summer of 2017 was an unprecedented year for area of land impacted, number of people displaced from their homes, and damage caused by forest fires (Desmog, 2017). Given the vast uninhabited areas of BC, most of the fires have not interfered with human settlements but their smoke has negatively influenced many people both in BC and in other areas. However, in recent years in BC, increased temperatures have brought an increase in large fires coming into contact with humans, destroying infrastructure and temporarily displacing people (Desmog, 2017). Other climate change predictions for BC include reduced summer stream flows, and reduced groundwater outflows, which will increase the demand for water amongst different sectors, putting

pressure on all areas of agriculture, which is particularly sensitive to climate (Canada in a Changing Climate, 2014: 104).

“SOCIAL” AND “ECONOMIC” CONSEQUENCES OF INDUSTRIAL AGRICULTURE

In addition to environmental impacts, industrial-capitalist nature food production and food systems have also brought social and economic harms. For instance, concentration trends of industrial agriculture have put farmers at a disadvantage. Consolidation and globalization have driven up market competition, leading to oligopolies - markets in which the top four multinational corporations control more than 50% of the market share (Lengnick, 2015). Competitive markets have pushed farmers out of business and led to the steady decline in farmer populations (Wittman et al, 2017). As an economic class, farmers currently make up less than 2% of the total North American population (Wittman et al, 2017). This dominant decline is also in part due to farmland loss. Between 1996 and 2006, BC experienced a 9.1 % drop in the number of BC farms. Farmland loss has contributed to declining farmer populations and disappearing local farmer knowledge; contributing to the increasing average age of farmers (current average age is 55) (Statistics Canada, 2016). Farmland is being lost to development of residential and other uses through exclusion from the Agriculture Land Reserve (ALR), driving up farmland costs (Stobbe et al., 2009). The average cost of farmland in British Columbia nearly doubled between 2005 and 2007 reaching \$31,000/acre, and land prices continue to increase (Agriculture and Agri-Food Canada, 2009; Farm Credit Canada, 2015). Land prices may surpass \$100,000/acre in some metropolitan areas, which is unaffordable to most farmers (Mullinix et al., 2013). Low income, hard work, and high-risk discourages new entrants from entering the field.

The rise in global food insecurity is a key indicator to support the social and economic harms brought by industrial-capitalist agriculture and food systems. The current definition of food security, according to The United Nations State of Food Insecurity “is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2002). According to the Food and Agriculture Organization of the United Nations (FAO) 2018 report, global hunger is on the rise, and people experiencing food-crisis level food insecurity also continues to increase. People affected by food-crisis level food insecurity rose from 80 million in 2015, to 124 million people affected in 2017 (FAO, 2018).

Industrial agriculture has had profound effects on global human health and well-being. Despite record outputs of global food production, there is still widespread hunger and malnutrition (Tilman et al., 2002; The Royal Society, 2009). Malnutrition can be found in all countries, regardless of their economic development, and is when people lack high quality diets, which are important for proper health and development (HLPE, 2017). In 2010, an estimated two billion people experienced malnutrition, which ranges from extreme hunger and micro-nutrient deficiencies, to obesity (Beal et

al., 2010; Foley et al., 2011, Webb et al, 2018). Besides conflict, climate variability and extremes contribute to increasing cases of hunger and malnutrition. But, increasing food supply alone is not enough to eradicate hunger and malnutrition.

PROBLEM SUMMARY

The current food system is far from sustainable (Burlingame & Dernini, 2012). Although food systems have achieved record outputs of crop and livestock yields over the last decades, they have also brought ecological degradation, social injustices, and food insecurity, and these consequences are noticed globally. These harms will only worsen in years to come since agriculture will be forced to face predicted intensified effects of climate change and population growth. Thus, current food system face extraordinary challenges. There is a strong urgency to develop and activate new priorities to cultivate sustainable food systems that will feed and support future generations.

Part 2. Strategies For Building Sustainable Food Systems

FOOD SOVEREIGNTY - A FOUNDATION FRAMEWORK FOR COMMUNITY FARMS

Instead of responding to food security with “more of the same” (Claeys, 2009) - increased production for export, productivity, and free trade - the international agrarian movement, *Via Campesina*, argues a need to respond with food sovereignty. Coined by *Via Campesina*, “food sovereignty” is an idea, practice, framework and expanding global movement that has the potential to build socially just, ecologically sustainable and rights-based food systems (La Via Campesina Annual Report, 2017). Wittman (2011) describes food sovereignty as “the rights of communities to have control over their own food systems,” which includes “their own markets, production modes, food cultures and environments” (Wittman et al., 2010). The food sovereignty movement pushes to redirect responsibility and decision making power to farmers, indigenous peoples, food workers, consumers and citizens, and for their rights to access land for ecological subsistence and social and cultural reproduction (Wittman, 2017). This radically opposes existing food systems that are controlled by corporate markets and reduce the complex qualities of food to internationally tradable commodities (Wittman et al., 2010) - a system that perversely results in growing cases of undernourishment and obesity (FAO, 2018). Namely, food sovereignty “Focuses on food for people, Values food providers, Localizes food systems, Puts control locally, Builds knowledge and skills, and Works with nature¹⁵” (Nyéléni Forum for Food Sovereignty, 2007). Food sovereignty surely supports a broad vision for social change. Even though rights-based approaches may not produce immediate progressive outcomes, they do offer a platform to discuss and exercise rights around food production and consumption, thus an effective means to change social and political contexts (Patel, 2007; Wittman, 2011; Desmarais, 2015).

¹⁵ These themes of food sovereignty are explained in more detail in the Nyéléni Forum for Food Sovereignty Report (2007).

Community farm's are a response to existing global food systems facing extraordinary challenges. Their concepts and frameworks are based on the ideals of the food sovereignty movement in North America. A community farm is a multi-functional farm for the community, rather than for private interest. Land is managed with the intention to contribute to local food production and to a diversity of social, economic, and cultural amenities that are derived from the land, for the benefit of the community (Wittman et al, 2017). Land can be owned and managed in many different arrangements: publicly, privately, cooperative, non-profit, or in land trust. In any case, the land owners, land managers, farmers, youth, community members and consumers all work together under a mutually-beneficial agreement or contract to bond the diversity of interests, working as an alternative to state-led approaches of land reform focused on individual, short-term profit gains (Wittman et al, 2017; Lahiff et al., 2007).

The following sections will expand on some of the basic principles of food sovereignty, identified by the Nyéléni Forum for Food Sovereignty report (2007), and how community farm's concepts and frameworks are based on the ideals of the food sovereignty movement in North America.

COMMUNITY FARMS “WORK WITH NATURE” TO PRODUCE FOOD

Industrial agriculture and global food systems play an inevitable role in global food supply, and aren't going away - as it is necessary to help feed and support global population and demand. However, agriculture is highly sensitive to climate conditions (eg. temperature and precipitation levels), making it vulnerable to effects that are predicted to come with climate change. Michalina Hunter speaks to the relevance and urgency to cultivate sustainable and resilient food systems:

“There are direct ties between climate change and agriculture that need to be addressed if we want to keep growing food. Alternative farming methods have tremendous potential to mitigate climate change by capturing and storing carbon from the air. Farming can also be gentler on our wildlife, waterways, etc. On the flip side, modern agriculture needs to be able to adapt to changes in climate and freak weather events.”

Michalina Hunter, Former President of Squamish CAN and Squamish Beekeeper

Hunter acknowledges the vulnerable state of modern agriculture in a changing climate, emphasizing that sustainable and resilient agricultural strategies are absolutely necessary to adopt in order to support future generations (Lengnick, 2015). Climate variability and extreme weather events are a key force behind recent increases in crisis-level food insecurity, since they harm agricultural production and food availability, causing ripple-effects that restrict people's access to food, like spiking food prices following an extreme event, and lowered incomes to those who depend on agriculture (FAO, 2018). Aligning with Hunter's perspective, Lengnick's (2015) book focuses on an important distinction

between the terms “sustainable” and “resilient” - that sustainable food production systems help to *enhance* the resilience of a food system in the region it’s established in, compared to industrial systems. In other words, resilient food systems *use* the principles and practices of sustainable agriculture to cultivate food systems in a changing climate.

The sustainable view of food sovereignty takes a particular focus on ecological health and community well-being as a basis for agricultural production. This view fundamentally opposes industrial agricultural philosophy for food production, which tends to be narrowly focused on profit due to its capitalistic values. Sustainable agriculture consciously moves away from industrial-capitalist, high input, monoculture agriculture, and recognizes that agriculture has the capacity to regenerate soils and manage more biodiversity, implement low-intensive production practices, and enhance environmental well-being to the local community (Lengnick, 2015; Scherr & McNeely, 2007). Sustainable agriculture uses “regenerative agricultural practices” (RAP) that reverse the greenhouse effect, by maximizing carbon fixation while minimizing the loss of carbon once it has returned to the soil (Rodale Institute, 2014). In addition to increasing carbon stocks, switching to RAP can increase agricultural productivity while reducing the need for fossil fuel energy, water, chemical fertilizers and pesticides, all while producing less waste (Lengnick, 2015; Zinn, Lal, & Resck, 2005).

Resilient agriculture is an extension of sustainable agriculture - using the principles and practices of sustainable agriculture, while explicitly acknowledging that climate patterns are no longer predictable. Farm management and production has always had to take weather variability and extreme events into consideration; however, projected increases in the frequency and intensity of weather variability and extremes is anticipated to create unprecedented challenges for North American food producers (Lengnick, 2015). Extreme climate events set off a cascade of interacting effects among the region’s water, land and energy resources. For example, during the event of a drought, soils dry up, and water resources often become limited, which requires water use limits and allocations to be imposed. Drier soils along with reduced water availability can contribute to lower agricultural productivity, which pose threat to the farm (Lengnick, 2015). With climate change, farmers will also be affected by increased agricultural losses by invasive species and pests, lengthening of the growing season, longer dry periods, and increases in extreme weather events (Lengnick, 2015; Warren & Lemmen, 2014). The effects of climate change on agriculture in Canada (and the world) will not be uniform. Resilient agriculture acknowledges this and uses adaptive strategies to enhance a system’s adaptive capacity - the ability of the system to cope with or adjust to climate change effects, moderate potential damages, and take advantage of opportunities created by climate change (Lengnick, 2015; Smit et al., 2001; Warren & Lemmen, 2014). Adaptive strategies can lessen the magnitude and rate of climate change by reducing greenhouse gas emissions and resource depletion, investing in soil health and promises to help promote an economically sustainable sector, since those who invest in adaptive strategies will benefit directly (Lengnick, 2015; Scherr & McNeely, 2007).

COMMUNITY FARMS “LOCALIZE FOOD SYSTEMS”

In order to build sustainable and resilient food systems there needs to be a coordinated local and regional effort. Community farms provide a strong foothold to ensure future food security through the use of local-resilient agriculture practices (Desmarais, 2015). “Adaptation” shifts the conversation to local, as certain adaptive strategies will work in some places, while not in others. For instance, localizing food production can help reduce fossil fuel emissions from transportation impacts by reducing the number of “food miles” - the distance that a food item travels from producer to consumer. Yet, this does not always apply to all food commodities. Some food commodities that are grown locally might have a higher yield outside the bioregion, requiring more energy per unit of production, but doesn’t include transportation energy emissions (Kwantlen Report, 2016: 38). Whereas another food commodity grown locally may have a lower production yield than if it was to be grown in a different bioregion, requiring more land and resources, and so it may be more energy and resource efficient to have those commodities transported from where they grow most efficiently (Mullinix et al, 2016). These contradictions can be resolved by conducting local research to determine the most efficient scale strategies according to what commodity crops grow most efficiently in a specific bioregion, while also determining what commodities can be produced more efficiently elsewhere. This suggestion is inspired by The Institute for Sustainable Food Systems (ISFS) - an applied research and extension at Kwantlen Polytechnic University in Vancouver - who recently published The Southwest Bioregion Food System Design Project (SWBC Project) report which aims to “investigate and support regional food systems as key elements of sustainable communities” in the Southwestern BC bioregion (Mullinix et al, 2016).

Growing food locally allows us to take more direct responsibility for the environmental impacts of our food consumption (Kwantlen Report, 2016). Low input farming systems, such as regenerative and organic, have been identified as some of the lowest carbon output techniques (Hird, 2010). Organically farmed soils can recover more quickly from severe weather events, and contribute more to climate change mitigation because it stores carbon more effectively than conventional soils (Kwantlen Report, 2016: 40). Reducing the ecological footprint of current agricultural practices and our consumption is critical for a sustainable future.

Influential poststructural approaches propose that localism is desirable to globalization saying that local food systems can resist global capitalism by using pure, conflict-free local values and knowledge (Born & Purcell, 2006; DuPuis & Goodman, 2005). Qualities attached to local production of food can differ but include: ecological sustainability, social justice, democracy, better nutrition, food security, freshness, quality, and stronger local economies (Hinrichs, 2003; DuPuis & Goodman, 2005; Brown & Purcell, 2005). Many alternative food initiatives foundation themselves off of these localism narratives, and in turn have contributed to the rise and strength of the localism movement (Allen &

Hinrichs, 2007; Feagan & Morris, 2009). Some of these initiatives include community supported agriculture (CSA), farmers' markets, Farm to Table initiatives, and small-scale, agrarian-style farms.

COMMUNITY FARMS “FOCUS ON FOOD FOR THE PEOPLE” BY INCORPORATING YOUTH

Not only is community farm-land used to produce food for local food systems, but there are often components on community education and providing space and infrastructure for community activities (Wittman et al, 2017). Community farms are a community hub where neighbours come together to buy produce, share knowledge, and celebrate food. Youth involvement through agriculture works to cultivate such a network. Leveraging the existing school system to educate today's youth is an effective way to increase the demand for sustainable agriculture and food systems. Barb Hinde speaks to the potential that education has to facilitate social and political change for a sustainable future:

“There's a huge disconnect for how food gets to our table. This is vital for sustainability. People don't know that strawberries don't grow in November. Educating the youth is educating the future.”

Barb Hinde, Squamish CAN Director and Retired Farmer

Without consumers being aware of the harms of industrial agriculture, there will be no demand for sustainable food. For instance, many consumers underestimate the ecological impact of industrial livestock production and continue to support this industry by purchasing meat grown on factory-style livestock farms. Livestock farms pollute waterways by waste runoff. These high-density farms host thousands of animals of a similar genotype (cows, pigs, sheep, chickens) that produce enormous amounts of animal byproduct, and because these farms have poor or non-existent waste containment systems, the waste runs off with rainwater and groundwater to pollute nearby waterways. The livestock themselves also contribute enormous amounts of GHG into the atmosphere through methane gas - this is especially a problem with cattle farms. Livestock farms also require enormous areas of cleared land to contain and process livestock. Deforesting land for livestock farms produces large amounts of GHG emissions from the use of fossil fuels and release of carbon stocks.

Education will also put pressure on governments and policy makers. Existing curriculums for young elementary school students (ages 4-7) don't typically cover environmental studies or experiences in nature (Honig & Mennerich, 2013). Research shows that students who have been exposed to concepts and issues regarding environmental studies (including conservation) show stronger signs of environmental care and awareness (Honig & Mennerich, 2013). It is crucial to educate children on environmental topics so they develop a sense of care and concern for the natural environment, non-human spaces, and natural resources (soil, water, air, forests), and can contribute to environmentally conscious communities (Samuelsson, 2008).

COMMUNITY FARMS “VALUES FOOD PROVIDERS” BY SUPPORTING NEW AND EXISTING FARMERS

Community farms also provide affordable land access options to farmers, through non-ownership models, such as long-term leases. A main barrier to local food production in the BC Southern mainland is the high cost of land, making it difficult for new entrant farmers looking to enter the profession (Wittman et al, 2017). Being a farmer herself, Barb Hinde is familiar with this narrative, and recognises there is a need for affordable land access opportunities to farmers (Wittman et al, 2017):

“There is a high cost to available arable farm land. For someone starting out in farming you would need a couple million [dollars] just to get started. An incubator farm is the perfect way for a new farmer to try the farming lifestyle without taking on a huge financial risk. It is a prime opportunity to introduce new farmers [to the industry].”

Barb Hinde, Squamish CAN Director and Retired Farmer

Hinde makes mention of “incubator farms” which are small affordable plots of land that are leased out to new farmers (Wittman et al, 2017). Non-ownership models offer a good way for farmers to overcome the structural and economic barriers of neoliberal consolidation of land and land ownership (Wittman et al, 2017). Community farms use non-ownership and shared access models to increase community participation on and off the land, which reflects the food sovereignty philosophy that land is a community asset, rather than a commodity, and that farmers and their livelihoods need to be valued and protected, rather than eliminated (Nyéléni Forum for Food Sovereignty, 2007).

Food sovereignty is “the rights of communities to have control over their own food systems” (Wittman, 2011), which is fundamentally predicated on the right to access land to support and protect farmland and sustainable land use while promoting social and political equity (Wittman, 2017). Community farms use community-based land reform (CBLR) approaches (eg. land trusts) to protect land from state-led decision making, instead moving this responsibility into the hands of the community. CBLR’s are an effective way to protect farmland - such as agricultural land reserve (ALR) - from being developed for residential and other uses thus conserving local food production and farmer jobs.

2.1 Problem Statement

Community farms are a response to global food systems facing extraordinary challenges. Projected population growth will accentuate the negative effects of industrial agriculture. By 2050, global populations are predicted to surpass 9 billion people, and global food demand will increase by 70% if current consumption trajectories continue. Increasing population and consumption are putting enormous pressures on agriculture and natural resources: approximately 1 billion people currently face undernourishment, as agricultural systems concurrently degrade water, soil, biodiversity, and climate on a global scale (FAO, 2018). All dimensions of food security and nutrition are affected by

climate change; rising temperatures and increasing annual cases of climate change related events, such as severe droughts, pose serious challenges to agriculture and food production (Lengnick, 2015).

In British Columbia (BC), as elsewhere, food price increase, more frequent extreme droughts, declining farmer populations, and rising food insecurity are of great concern. BC also experiences challenges to conserve farmland and produce local, sustainable food. A main barrier to local food production is the high cost of land to farmers. Land prices have been driven so high by developmental pressures for housing and other uses, for example, that farmers cannot afford to buy land without significant financial risk. Other barriers to local food production also arise from high land prices including: increase in the average age of farmers (current BC average farmer age is 55) (Statistics Canada, 2016); and disappearance of farmer knowledge. BC also faces issues with protecting agricultural land, as most ALR land is currently not used for farming (BC Ministry of Agriculture, n.d.). For instance, in the Metro Vancouver region, the number of ALR parcels used for residential development greatly outnumbered those used for agriculture (BC Ministry of Agriculture, n.d.). Despite these challenges to local food production, communities, governments and citizen organizations in BC are increasingly advocating for more localized food systems to help respond to the serious concerns associated with existing food systems (Tatebe et al, 2018). Strengthening regional food systems presents a substantial opportunity to improve community and environmental health and wellbeing.

2.2 CAN Farm Models

Appendix A.1 presents an inventory of community farm models, which inspire and reflect various components of the CAN Farm concept. The identified models were selected based on a desire to highlight diverse approaches to the opportunities and challenges of the CAN Farm concept. These models include themes of: increased public access to and education about food production, support to farmers with limited resources, and preservation of farmlands. Each example offers interesting aspects that could be combined in the CAN Farm model to support these themes.

Part 3: CAN Farm Project Proposal

3.1 History of the Squamish CAN

The Squamish CAN Community Farm (CAN Farm) project is being developed under the Squamish Climate Action Network (Squamish CAN)¹⁶. CAN is a registered BC Society community action group in the process of becoming a charitable organization. Squamish CAN's mission is to educate, support, and empower the community of Squamish by developing, promoting, and implementing sustainable strategies to mitigate and adapt to climate change. Squamish CAN operates many environmental and

¹⁶ See <http://squamishcan.net/> for more information.

socio-economic enhancement projects in Squamish, BC. For the past ten years the organization has focused on helping Squamish achieve the goals of zero waste, supporting green building and energy efficiency in homes, and advancing municipal and regional food systems in efforts to ensure all community members have access to healthy, local and culturally appropriate food at all times.

Squamish CAN began in a true grassroots fashion, when one of their founders, Ana Santos, wanted the Squamish community to learn about climate change through an eight-week movie series. The overwhelming attendance of the movie series sparked energy to establish a new non-profit in Squamish that was dedicated to mitigating climate change through local initiatives. Fueled by volunteers and very little funding, Squamish CAN focused its energy on six main areas, including: food, waste, transportation, energy, water and education. The first initiative was helping the Cedar Valley Waldorf School put solar panels on their roof, that would preheat the water used in the bathrooms and kitchen sinks. Following shortly was the first of an annual Squamish ReUse-It Fair, where community members bring unwanted usable items or take away gently used treasures from someone else, for free. While the energy and waste group were working on initiatives the food group was hosting free learn how to garden and expand your kitchen skills workshops. Once CAN had a few successful initiatives and projects under their belt, they began getting some funding from various grants, of which one was a sustainable grant from Vancouver Coastal Health to support community food action initiatives within the Sea-to-Sky Corridor. To date the community food action initiatives include: three community gardens with over 200 gardeners; 12 edible growing and food skills workshops (canning, knife skills, and fermenting to name a few) that are free to all public members and have been very successful in its ; an annual farm to table dinner fundraiser for 150 guests to celebrate our local farmers and the harvest; and many more. In 2015, CAN established an edible schoolyard project at Mamquam Elementary School. They employ two part time staff who, with the help of a part-time volunteer, facilitate edible gardening sessions that connect to the BC curriculum for grades K-6. Many volunteers support the ongoing maintenance and running of the gardens. In the spring of 2018, CAN built a large 20 X 42 foot greenhouse to expand garden school program opportunities, and to grow vegetable and pollinator-friendly flower seedlings to sell to the community to help sustain operations.

The structure of how CAN began and how they still operate has allowed them to empower their members and community partners. CAN maintains its success with their willingness to push boundaries, get the right people in the room and talking to find win-win opportunities. CAN is often described as the center point for many community initiatives involving community partners to achieve a common goal. CAN has been working with Squamish municipal and regional governments, public educators, other non-for profits, and local businesses to see change happen in the Squamish community and hopefully have inspired and continue to inspire other communities.

Throughout 2013 and 2014 Squamish CAN was participating in community food forums, where members of the community who worked or volunteered within supporting any food security initiatives got together a few times a year to see how they might learn about one another's food services and how they could work together. During this time, Squamish CAN took lead on establishing the work of a Squamish Food Charter. A food charter can act as an educational tool and a guiding document to inform policy, but is not policy. In July of 2015 Squamish CAN presented the Squamish Food Charter to the District of Squamish, which they endorsed. Following this endorsement of the charter, Squamish CAN helped form the Squamish Food Policy Council¹⁷ in October of 2015. This was due to the success of grants, community support and the opportunity to leverage the 2040 Official Community Plan¹⁸ (OCP).

The Food Policy Council is made up of various representatives from across the Squamish food system from farmers, a regional dietician, food educators and more who spent a year working closely with senior planners and the District of Squamish Mayor and Council. The food policy council staff and members were able to identify major barriers and gaps in the community which helped inform the seven pages of food policies in the OCP. Some of these barriers identified include access to land, land affordability, knowledge gaps, a lack of processing and storage facilities, etc. Food policy council staff were able to attend provincial gatherings, as well as visit and tour farms across the province to learn about how community organizations are creatively addressing these complex barriers. The CAN Farm model draws from various existing community farm models in Southwest BC: Tsawwassen Farm School, Loutet Farm, and Haliburton Farm, just to name a few. These models include themes of: increased public access to and education about food production, support to emerging and existing farmers with limited resources, preservation of farmlands, and use of local-resilient agricultural production practices.

CAN has demonstrated their commitment and ability to move the community farm initiative forward. CAN continues to explore options for land with a minimum of ten acres within the District of Squamish boundaries. Inspired by other such projects which have secured the future of farmland by establishing a land trust, CAN intends to protect the community farm in the same manner.

3.2 CAN Farm Project Model

Purpose

The CAN Farm is a response to a global food system facing enormous challenges. The CAN Farm's mission is to cultivate longevity in food production practices and foster community engagement and

¹⁷ See <http://www.squamishfoodpolicycouncil.com/> for more information.

¹⁸ See <https://squamish.civicweb.net/filepro/documents/?preview=162065> for more information.

learning. The CAN Farm vision is to be a leading model for community-supported, sustainable organic agriculture that helps cultivate resilient ecological systems and communities. The CAN Farm model draws from various existing community farm models in Southwestern BC: Tsawwassen Farm School, Loutet Farm, and Haliburton Farm, just to name a few (Appendix A.1 expands upon these farm models).

Goal

To foster a place-based food system¹⁹ in Squamish in order to increase and strengthen local food security.

Mission and Objectives

The CAN Community Farm will address several challenges in Squamish's food system and community, and barriers to local food production by:

1. Engaging Squamish youth (13-18 years) through agriculture
2. Supporting new and existing farmers by providing land, processing, and marketing opportunities (ie. Incubator farm model)
3. Engaging the public

These challenges were identified during several public consultation gatherings from October 2015 - April 2018 while receiving input for the Food Systems section of the District of Squamish 2040 Official Community Plan (Adopted June 2018).

Objective 1: Engage Squamish Youth Through Agriculture

Approach

The CAN Farm is dedicated to engaging and involving youth (13-18 years) in agriculture through educational programs and work and volunteer opportunities. Educational programs will offer grade appropriate hands-on learning, that aims to increase awareness about how food is grown and its impacts on health and communities. Work and volunteer opportunities will allow youth to work on the farm or with the school programs and to be involved in the processes of learning, growing, and selling produce to the community. Thereby providing employment and life skills training for teens and young adults in Squamish.

¹⁹ Systems that respond to the developmental needs of the community and the regions which they reside. Place-based food systems incorporate local, climate-friendly and resilient food production practices, and are considered to be a key role in cultivating sustainable economic, ecological, and societal futures (Kwantlen Report, 2016).

Key Factors

1. Enhance the community's connection to food to maximize its health and social benefits (Aligns with the District of Squamish Official Community Plan, 2017: 138).
2. Enhance recreation access, services and programming for children and families, youth providing a range of affordable, age-appropriate and accessible play, recreation and nature exploration opportunities (Aligns with the District of Squamish Official Community Plan, 2017: 93).
3. Create and foster an inclusive space to work and learn about food production
4. Provide skills, training, volunteering, and employment opportunities
5. Meet the BC Curriculum core competency goals through agriculture education programs

Justification

- Agriculture influences a range of factors that affect people's physical and mental health (Agriculture's Connection to Health, 2016)
- Squamish youth could use more options to employment training, after-school and summer employment, skills training, and activities
- Farm to school initiatives have the potential to contribute to healthy eating (Agriculture's Connection to Health, 2016)
- In 2013-2014, less than 50% of middle and high-school aged students were physically active (PHSA, 2017)
- In 2013-2014, 54% or less of middle and high-school aged students ate more than five servings of fruits and vegetables a day. (PHSA, 2017).
- Farmland walks are significantly associated with less stress and negative emotions, and greater mental well-being (Agriculture's Connection to Health, 2016)
- It is crucial to educate children on environmental topics so they develop a sense of care and concern for the natural environment, non-human spaces, and natural resources (soil, water, air, forests), and can contribute to environmentally conscious communities (Samuelsson, 2008).

Risk Analysis

This section identifies potential risks and their mitigation strategies for the CAN Farm youth education programs and work and volunteer opportunities.

Table 1. Education program Analysis

Issues-Risks	Strategy
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<ul style="list-style-type: none"> ● Education programs and work/volunteer opportunities do not successfully engage interest in Squamish youth 	<ul style="list-style-type: none"> ● CAN Farm Committee will work with schools and youth organizations in Squamish to develop programming that is attractive to youth (age appropriate, hands-on) ● Work opportunities offer a “living-wage” to attract and support youth
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Best Practices

- Loutet Farm, in North Vancouver, is a strong example of success that effectively involves youth through education and agriculture. Their agricultural programs are “fostering a new community of responsibly minded and enthusiastic gardeners” in the North Shore (Dagenais, 2016).

Refer to Appendix 1 for more information on this farm

Objective 2: Supporting New and Existing Farmers Through Incubator-plot Program

Approach

The CAN Farm will provide new entrants to farming with long-term lease opportunities through an incubator-plot lease program. This program will give new farmers an affordable land option where they can build their business without the significant financial investment and risk of buying property and agricultural infrastructure. Farmers will have shared access to resources and infrastructure on the CAN Farm, such as tools, processing, storage, and sales. Farmers will agree to using organic and sustainable agricultural practices. Growers on the CAN Farm will coordinate with other farmers in Squamish to determine what crops they will grow based on which crops grow well on their site, who can grow the crops most effectively, and the demand (Kindling Trust, 2012). The CAN Farm will also facilitate a mentorship program to connect new farmers to experienced farmers to address the gap in farming knowledge many new farmers have. Hinde agrees that knowledge sharing through farming mentorship programs offer incredible opportunities to addressing knowledge gaps:

Farmer Mentorship: “It’s a win-win for everybody... the mentorship from retired farmers is an excellent idea, being a retired farmer myself. The world is full of people who have been farming for many years. All that knowledge is in their head and it’s so valuable for people going into the farming business. I can think of 5 people off the top of my head who would jump at the opportunity to mentor emerging farmers. Once a farmer, you’re always a farmer.”

Barb Hinde, Squamish CAN Director and Retired Farmer

Sharing and passing on this bounty of knowledge helps food providers and local organizations to conserve, develop and manage local food production and systems (Nyéléni Forum for Food Sovereignty, 2007).

Key Factors

1. Have a thriving food and farms sector that benefits the local community and the land.
2. Provide farmers with a multi-year lease program (ie. incubator plots); education and mentorship; and processing and distribution infrastructure.
3. Increase self-sufficiency of the farm through production and sales.
4. Demonstrate cooperative and climate-friendly farming methods.

Justification to Implement a Community Farm in Squamish

- Protect and enhance the agricultural land base within Squamish and the region (aligns with District of Squamish Community Plan: 134)
- Maximize agricultural land availability and access to retain and attract new farmers in the agriculture sector and drive increased local food production (aligns with District of Squamish Community Plan: 134)
- Increase the value of the local agri-food economy (aligns with District of Squamish Community Plan: 134)
- Support and promote local food land resources, production and sales (aligns with District of Squamish Community Plan: 135)
- Expand community facilities and infrastructure for food processing, distribution and storage within Squamish to promote regional food production, local employment, and facilitating access to local and larger markets (aligns with District of Squamish Community Plan: 136)
- Support regional food security initiatives to enhance the Squamish 'Foodshed' (aligns with District of Squamish Community Plan: 139)
- Create a more stable market for local food producers (aligns with Kindling Trust, 2012)
- Only 4% of 4,066 ha of designated ALR land in Squamish is used for farming (Agricultural Land Use Inventory, 2017)
- There are connections between agriculture and health in communities
- Farming is a viable use for land in flood hazard areas (District of Squamish Official Community Plan, 2017: 133).

Justification to Support New Entrant Farmers in Squamish

- The regional agrologist from the Ministry of Agriculture, Kim Sutherland, presented the following reasons why farming should be supported in Squamish:
 - Farming is a net tax benefit for local governments

- Moderate coastal climate
- Good access to markets
- Soils can grow a range of crops
- Excellent water resources
- Access to agriculture services in lower mainland and Pemberton
- High quality of life and excellent amenities (e.g. biking, skiing, Vancouver close by, etc.) (Sutherland, 2016)
- Compared to industrialized production systems, sustainable farmers typically manage greater biodiversity, while employing more people with better jobs, and manage to circulate more money in the local economy (Lyson, 2004). These farmers offer models of locally adapted food production, processing and distribution that contribute to producing ecological and social goods to the community while supplying nutrient-rich foods (Lengnick, 2015).
- “Agriculture directly impacts health by influencing food choices and healthy eating patterns” (Agriculture’s Connection to Health Report, 2017: 1)
- Farming is a viable land use in the floodplain, where other uses would not be suitable (Aligns with the District of Squamish Official Community Plan, 2017: 133). Much of Squamish’s land is in the floodplain (District of Squamish Integrated Flood Hazard Management Plan: Final Report, 2016).
- Land is expensive; competition for non-farm uses drives up cost (Kwantlen Report, 2016)
- Knowledge barriers to learning how to farm (Farm Folk City Folk, 2016)
- Start up costs are prohibitive (e.g. land clearing, equipment, fences, greenhouses) (Wittman, 2017)
- Average age of farmers in Canada is increasing (current average age is 55) (Statistics Canada, 2016).

Justification to Grow Local Food in Squamish

The below points show that the local food demand in Squamish is strong and growing:

- “The local food market is strong and it’s not going away” - Kim Sutherland, Regional Agrologist, BC Ministry of Agriculture (Sutherland, 2016)
- “Something that is unique to Squamish is that the local people here are very supportive of local food. The current farmers at the farmers market might take home \$2000-\$3000 per market.” - Barb Hinde, Squamish CAN Director and Retired Farmer
- “Local farmers’ CSA’s often sell out” - Barb Hinde
- “Attendance at the Squamish Farmers Market has been increasing (almost doubled) over the last 3 years. It’s really well-attended. In the peak of summer, there will be 500 people there at a given time.” - Barb Hinde

- “The Community Farm would be a “destination” for people to have the farm experience and learn about what it takes to bring food to a farmers market” - Barb Hinde, “ [There are] only a few farmers in Squamish” - Barb Hinde
- Individuals perception that local food is safer, healthier and tastier may influence their decisions to buy local and eat healthier if local produce is more readily available (Agriculture’s Connection to Health, 2015: 4)

Risk Analysis

This section identifies potential risks and mitigation strategies for the CAN Farm Incubator-plot lease program for emerging and farmers.

Table 1. Risk analysis for Incubator-plot Lease Program for new and existing farmers

Issues-Risks	Strategy
Failure to recruit enough new farmers to lease the plots	<ul style="list-style-type: none"> ● Approach new and existing farmers living in Squamish, who wouldn’t need to face potential challenges of relocating. ● Work with farm schools and organizations dedicated to work with new farmers (i.e. Tsawwassen Farm School, UBC, Young Agrarians) to recruit farmers outside of Squamish.
Recruit farmers who fail or resist using resilient farming practices	<ul style="list-style-type: none"> ● Develop robust and clear lease agreement that clearly states each member’s role and responsibilities ● Detailed partnership agreements (restaurants, CSA’s) ● Regular business meetings and personal check-ins
Land lease contracts are not effective	<ul style="list-style-type: none"> ● Develop robust and clear lease agreements, and a protocol for renegotiating leases with farmers <ul style="list-style-type: none"> ○ Consult with new farmers, Young Agrarians, BC Ministry of Agriculture, Farm Folk City Folk.

Tables 2 and 3 were drawn from Persephone Brewing Company's Hops Farming Business Plan Template (2015) for this risk analysis. Kindling Trust's Guide to Setting up a Growers' and Buyers' Co-operative (2012) were borrowed and acknowledged to inform additional risks and strategies in this risk analysis.

Table 2. Identifies potential *economic* risks, associated with local food production, and their appropriate mitigation strategies (Hops Farming Business Plan Template, 2015)

Issues - Risk	Strategy
<ul style="list-style-type: none"> Canadian Economic downturn reduces number of people who can afford local produce 	<ul style="list-style-type: none"> Produce quality products so people will always purchase Produce high quality specialty varieties alongside standard production, in order to buffer against economic shifts and new demands for fresh produce
<ul style="list-style-type: none"> Decrease in market value for vegetables grown on CAN Farm 	<ul style="list-style-type: none"> Maintain product value, quality and uniqueness. Growers on the CAN Farm may coordinate with other farmers in Squamish to determine what crops they should grow, based on which crops grow well on their site, who can grow the crops most effectively, and the demand (Kindling Trust, 2012). Develop a unique variety and establish purchasing contracts with other farms
<ul style="list-style-type: none"> Failure to develop relationships with local restaurants to sell food to. This could result for a variety of reasons. For instance, many restaurants don't use local produce because local farms are not big enough to fill their orders. 	<ul style="list-style-type: none"> Use centralized storage/market location - aggregate produce orders (e.g. Food Hub) The Community Farm project could also help to build trust chefs have in the ability of local farms to produce consistent quantity and quality <ul style="list-style-type: none"> The market already exists in Squamish (Eg. Salted Vine and others that offer local and seasonal menu options)

<ul style="list-style-type: none"> ● Direct marketing fails to be profitable for tenure farmer businesses 	<ul style="list-style-type: none"> ● Produce is connected to demand of local consumers <ul style="list-style-type: none"> ○ Informed by community input regarding needs and priorities ● Farmers will establish a cooperative marketing agreement to promote and sell each other's produce. One approach to cooperative marketing is through "collective selling" - farmers pool their resources together, and are able to consistently supply larger quantities of product to restaurants, for example. Collective selling is an effective organization model for independent, small-scale, local farmers to be successful in a competitive market. ● CAN Farm offers a course designed to teach incubator farmers about direct marketing, and best practices to be profitable.
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(Hops Farming Business Plan Template, 2015)

Table 3. Identifies potential *environmental* risks, associated with local food production, and their appropriate mitigation strategies (Hops Farming Business Plan Template, 2015)

Issues - Risk	Strategy
Climatic risks which include drought, hail, heavy rain, cold temperatures, floods	<ul style="list-style-type: none"> ● Incorporate innovative farm tools to help deal with climate conditions ● Observe weather conditions ● Design an efficient farm with precautionary measures and back-up water supplies ● Implement efficient agricultural practices ● Adapt to changing growing seasons ● Focus on crop diversity

Pests and disease	<ul style="list-style-type: none"> ● Develop an integrated pest management plan before planting the community farm (identify current pests) ● Seek opportunities to work with local universities to do research for pest control management ● Research best management practices in other countries and anticipate the impact of climate change on pest inundation
Wildlife	<ul style="list-style-type: none"> ● Implement and maintain electric fences ● Use best practices for composting ● Require vigilance in harvesting ripe fruit and clearing dropped fruit to reduce attractants

(Hops Farming Business Plan Template, 2015)

Best Practices

- Tsawwassen Farm School (incubator plots)
- Haliburton Farm (incubator plots, community involvement and education)

Refer to Appendix 1 for more information on these farms

Tenure/Management

The Squamish CAN will be the spearhead organization for this project. The CAN Farm will operate as a social enterprise to manage farm implementation and operations, payroll, and fundraising, with all proceeds going back into the project. A steering committee for CAN Farm (CAN Farm Committee) is made up of farmers, SD48 educators, and Squamish CAN directors to implement the first stages of this project (e.g. finding land, fundraising, feasibility, business plan, etc.). As the project expands, the CAN Farm Committee will hire employees to manage different aspects of the project (e.g. managers for education, events, farm operations, etc.). CAN farmland will be protected, owned and managed under a land trust model - owned by the Squamish community. Land trusts seek to protect local food production, and prevent further farmland loss.

Target Producers

The CAN Farm prioritizes supporting youth, as well as new and existing farmers since the CAN Farm believes young generations hold the key to the future. This emphasises the need to establish long-term solutions that increase access to quality education, volunteer and work opportunities, and life-

skill experience to support young generations in achieving their potential, while concurrently reducing exposure to potential conflict and crisis.

There are two target audiences of The CAN Farm. One target audience being Squamish youth who are supported through educational programs that promote hands-on learning. The CAN Farm also supports youth work and volunteer opportunities, which help to increase food growing knowledge and skills, thereby increasing community capacity to grow and share locally produced food. The second target audience is aspiring new and existing farmers who already have foundational knowledge and experience with farming. The CAN Farm offers an incubator-plot lease program that connects new and existing farmers with direct local markets, while contributing to building resilient local food systems and economies. Organic-resilient farming is the focus of CAN Farm production given the difficulty of competing with large-scale growers, the direct access to local markets, and the environmental and social benefits provided by organic and resilient agriculture.

Land/Location

Currently the Squamish CAN Community Farm does not have a secured land site. However, the CAN is working with School District 48 and Regional MLA, Jordan Sturdy, to explore land options.

Ideally, the CAN Farm Committee is looking for land that is:

- Located near Downtown Squamish or Brackendale to ensure accessibility to Committee members, farmers, youth and customers.
- Access to water and energy resources
 - municipal or nearby natural stream/watercourse
- Improvable soil conditions, to optimize crop production. *Determine soil capability:
 - Texture (from gravel to clay)
 - pH (or acidity/alkalinity)
 - organic matter content
- *Not contaminated by heavy metals, petroleum and oil-based compounds, etc.
- Cleared (but willing to clear if existing trees have value)
- Receives optimal heat and sun exposure (south-facing slope)
- Minimally to moderately hilly land
 - can be levelled to make it more suitable for crop production, however, this will also add to start up costs
 - Hilly sections may also be used for forage production, grazing livestock, or horticultural products
- Not too close to activities that emit loud noises, electric and magnetic fields (EMFs), or other pollutants

Other points:

- It is acceptable if the land is located in floodplain (District of Squamish Official Community Plan, 2017: 133).
- 96% of Squamish Agricultural Land Reserve (ALR) land is not used for agricultural purposes ([ALUI](#), 2017). Underutilization of agricultural land ought to be at the forefront of discussions around regional food systems.
- Larger parcels of land (>20 ha) allow for farms to grow, and build upon existing infrastructure and resources.

* Detailed soil analysis at an independent laboratory provide specific information on levels of nutrients and contamination, and waste from mining, quarrying and drilling. Using soil test result information, laboratories also provide guidance on what crops are best suited for those soil types, to help farmers achieve optimal crop quality and revenue.

Scale/Parcelization

New incubator farmers will lease out one acre sized plots. This is a good starting place for new and existing farmers. If parcel sizes are any smaller (under one acre), it can make it difficult for farmers to make a living, whereas larger parcel sizes (over one acre) may be overwhelming and difficult for farmers to manage. There will be options to expand operations as farmers become more experienced. There is a five year minimum lease agreement. Any less makes it difficult for farmers to make investments and notice a return.

Common Infrastructure and Amenities

The CAN Farm offers a wide range of common infrastructure and amenities for their incubator farmers and elementary, middle school and secondary school students that will be implemented over the years. Some of these shared resources and facilities include, but are not limited to:

- Education and mentorship programs designed appropriately to student grade and farmer experience levels.
 - Course topics include:
 - Organic production and farm management
 - Integrated pest management
 - Water conservation
 - Healthy Soil Building
 - Direct Marketing Advice
 - Composting
 - Seed Saving
- Water and irrigation equipment;
- Tractors and other agricultural equipment;

- Shop for repair and storage of equipment;
- Processing equipment: vegetable wash station, dehydrator, and honey processing equipment;
- Post harvest storage equipment (Fridges, freezers), and dry storage;
- Compost;
- Shared farm stand

Other Common Infrastructure

- Covered outdoor workshop space
- Indoor workshop and event space
- Community kitchen
- Office space
- Composting toilets
- Rainwater catchment system

Practices and Crops

Agricultural practices focus on organic and sustainable-resilient production methods that provide for the economic viability of farmers as well as ecosystem and community health. Tenure farmers practice cooperative management to develop mutual-agreements for various purposes, which include determining crop production (ie. What crops are grown? How much? Who grows them?), management and advertising for direct market garden, to sell agricultural produce directly to consumers and restaurants.

Economics/Sources of Funding

Revenue will be generated through a market garden which sells organic and healthy food to the community through community supported agriculture (CSA), on-site farm stands, and delivery/pickup for restaurants. Incubator farmers will establish a cooperative marketing agreement to promote and sell each other's produce. One approach to cooperative marketing is through "collective selling" - farmers pool their resources together to consistently supply larger quantities of product to restaurants, for example. Collective selling is an effective organization model for independent, small-scale farmers to be successful in a competitive market.

Another significant source of revenue-generating amenities will come from incubator lease payments.

Youth volunteering, employment, and apprenticeships will be a significant source of productivity for the farm, while also supporting them in their educational, personal and career interests around organic, sustainable, small-scale agriculture and human health.

Take in donations and profits from various community outreach and education initiatives (stated below)

Community Outreach/Education

The CAN Farm will develop a set of programs that address incubator farmer interests and priorities, and which reflect the full spectrum of the local food system, including organic food production, crop rotation and garden planning, building healthy soil, water conservation, integrated pest management, and seed saving. These courses and programs will also be offered publically to the community.

Other community outreach initiatives/activities include:

- Educational farm tours for secondary school, university students and public,
- Host farm apprentices;
- Donate to food banks;
- Climate friendly farming classes, workshops on the land;
 - Including organic food production, seed saving, etc.
- Host festivals, feasts, celebrations and Farm to Table Dinners.

Conflict Resolution and Management

Cooperatively managed operations and partnerships involve many different stakeholders, who hold different interests, roles and responsibilities. Diverse and numerous stakeholders increase the potential for conflicts to arise, which may impact the success of a community farm, therefore, it is important for community farms to implement both conflict resolution and conflict management strategies, which will include:

- Robust and clear lease agreements
- Clear understanding about each member's role and responsibilities
- Defined farm maps (eg. indicating incubator plot boundaries, who operates what parcel, agriculture equipment location)
- Detailed partnership agreements
- Nonviolent communication workshop
- Regular business meetings and personal check-ins
- Celebrations!!

Timeline

The Community Farm committee plans to implement this project in phases. Capital costs will be raised to prepare land and build initial infrastructure necessary to begin farm operations. The first phase will start generating revenue from selling food through neighbourhood farm gate sales, community supported agriculture boxes (CSAs), farm tours, and fundraising events. Remaining phases will be

realized as funds are raised and enough revenue is generated to ensure viability and long term sustainability in the project.

A project status report will be conducted every month to check if the project is schedually on track - identify new risks or issues, and accomplishments that were made. These factors are all determined based on the project plan, which follows this project proposal.

Proposed Partners

- School District 48
- Parent Advisory Committees
- Under One Roof Project/Helping Hands/Cutting Barriers (for employing folks with barriers to employment and offering employable skills training)
- Big Brothers Big Sisters (for youth involvement)
- Squamish Youth Centre (for youth involvement)
- Squamish Nation (for guidance on traditional food systems)
- New entrants to farming (to lease the incubator plots)
- Retired and established farmers (mentorship for new farmers)
- BC Ministry of Agriculture (guidance on farming practices)
- Farm Folk City Folk Society (guidance on community farms)
- Young Agrarians (guidance on community farms)
- Kwantlen Polytechnic University (for agriculture research projects)
- Quest University Canada (for agriculture research projects)
- University of British Columbia (for agriculture research projects)

Part 4. Conclusion and next steps for the Squamish CAN Community Farm

4.1 Conclusions

This section outlines the opportunities and challenges of implementing the CAN Farm project.

Opportunities:

- The CAN Farm offers the rare opportunity of affordable farmland to farmers to start-up their business and build local markets, in a rapidly growing town, protected by access to direct markets (farmers markets, CSA, local restaurants).
- SD48 are enthusiastic partners
- Increasing connections with school-based food systems and education initiatives
- Building on demand for specialty foods from the diverse local community
- Exploring partnerships with local horticultural and business enterprise programs

Challenges:

Challenges to securing land include:

- Currently no confirmed land site
- Residential and industrial developmental pressures
- Zoning and other regulations that might inhibit land for agricultural use
- Rising unaffordable land prices in Squamish may present challenges to farmers who are relocating from elsewhere. One way to address this issue is to approach new and existing farmers living in Squamish, so they don't need to relocate.
- Overhead costs for land purchase, and development and management of the CAN Farm project will drop after the first 5 years, but initial start up costs will be high.
- Establishing funds for development and marketing of project elements

4.2 Next Steps

Further assessment of these opportunities and challenges identified next steps:

- Quantify demand of new and existing farmer potential investment
- Continue communication and cooperation with School District, local governments, and MLA to move forward with securing land.
- Establish formal connections with middle and high school and other youth organizations to plan how to involve students
- Draft incubator farm contracts
- Development of preliminary management plan
- Identifying grant opportunities for capital costs
- Find feasible land options
- Build a strong business plan to communicate to funders about the project
- Secure land

Once funding and land has been secured:

- Prepare land (clearing/rock picking/amending)
- Set up infrastructure (electric fences, irrigation, power, shipping containers for storage, veggie wash sinks, buying tools, refrigeration system etc.)
- Recruit new farmers
- Develop and coordinate an ordering/distribution process that is as convenient as possible for both growers and buyers
- Build farm production plan and adaptation strategy
 - Climate change mitigation and adaptation strategy will require continued research and stakeholder engagement. For example, a production plan that implements resilient agricultural practices will be important to determine what produce to grow on the

farm. An adaptation strategy will become increasingly important as climate change continues.

Appendix A.1 - Existing Models of Community Farms in Southwestern BC

Appendix A.1 presents an inventory of community farm models, which inspire and reflect various components of the CAN Farm concept. The identified models were selected based on a desire to highlight diverse approaches to the opportunities and challenges of the CAN Farm concept. These models include themes of: increased public access to and education about food production, support to farmers with limited resources, and preservation of farmlands. Each example offers interesting aspects that could be combined in the CAN Farm model to support these themes. Online research was conducted on each community farm website to collect the information that is stated in Appendix A.1.

Tsawwassen First Nation Farm School (TFN Farm School) (Tsawwassen Farm School, 2019; Incubator Program, 2018)

This farm model illustrates how cooperatives have been a realistic means to build community and create discussions around land stewardship and the future, by specializing on merging sustainable agriculture and traditional indigenous food systems, and creating opportunities for new farmers and local food systems.

Background and Purpose

The TFN Farm School is in collaboration with Tsawwassen First Nation and the Institute for Sustainable Food Systems (ISFS) at Kwantlen Polytechnic University. TFN Farm School is host to incubator plot farmers and Farm School students. The Farm School Program provides students with fundamental knowledge and skills on starting a farm operation. The Incubator Program offers farmers opportunities to build on their knowledge and skills developed from the Farm School Program to build their business, and their own networks and markets.

Land

The TFN Farm School is situated on a 20 acre farm, on the traditional lands of the Tsawwassen First Nation, in Delta, British Columbia. The farm consists of a traditional medicinal garden, a mixed fruit orchard, an organic market garden, livestock animals including chickens, pigs and ducks, and incubator plots for new farmers which program graduates can lease to start their farm businesses.

Tenure/Management

TFN Farm is managed by one farm manager and four supporting staff.

A team of teachers help guide and support the learning and skill-building process for Farm School students.

Target Producers/Crops

TFN Farm is host to incubator plot farmers and Farm School students. Farm School students are granted access to the Incubator Plot Program after graduation from the Farm School Program - *only* Farm School students are offered access to the Incubator Plot Program. The Farm School Program incorporates both in-class and practicum based learning which provides students with fundamental knowledge and skills on starting a farm operation. Students commit to the whole duration of the Farm School Program (April to mid-November), which is a combination of in-class and experiential practicum learning.

In-Class learning consists of the following “core components” and include their own field-based learning. Topics such as sustainable agriculture systems, farm safety, mechanization, construction, cover crops, resources and certifications, farmscaping, habitat enhancement etc. are integrated into core courses.

- Market Crop Production
- Soils, Water & Compost Management
- Integrated Pest Management
- Farm Animals - Poultry, Pigs
- Apiculture - Beekeeping
- Fruit Tree Production
- Farm Business Planning and Marketing
- Farm Tools and Machinery
- Indigenous Food Ways

Experiential Practicum

Farm School students “participate in a minimum of 350 hours of practical crop production and post-harvest experience under the direction and/or supervision of Farm School staff or other community mentors.” Practicum also involves personal projects and special events.

Upon graduation from the Farm School Program it is encouraged that the students continue through to the Incubator Program to develop their knowledge and skills, build their business, and develop their own networks and markets.

For a student to be eligible for the Incubator Program, they must have:

- Complete 85% of all courses, and a minimum of 350 practicum hours.
- Submit farm business proposal which outlines business goals and vision, market research, financial goals, production goals and marketing plan

- Must be a business, not subsistence

Incubator Program includes access to:

- ¼ to ½ acres of arable land for up to 3 years
- Communal infrastructure
- Communal tool share
- Technical and mentorship support from teachers, farm staff and other incubator farmers
- City water

The CSA produce is certified organic vegetables, with the option of add-on flowers and herbs, and is grown by students. The farm is also host to livestock like chickens, pigs and ducks.

Farming Practices/Environmental Conservation

Uses organic farming, as well as practices that merge sustainable agriculture and traditional indigenous food systems.

Economics/Sources of Funding

TFN Farm School has several sources of funding which cover farm operation costs: Farm products and CSA, The Farm School program, and grants.

The CSA program operates from June to October and offers a 20 weekly box subscription. CSA produce is certified organic and grown by students, and CSA boxes include 7-10 of the freshest produce items available that week, with the option of add-on flowers. CSA cost structures are competitive with market prices.

The Farm School program operates as a cost-recovery program where all fees go back into developing the farm and education program. The cost/fee structures are competitive with similar programs. By enrolling, students commit to the whole duration of the program, which is a combination of in-class and experiential practicum learning, and runs from April to mid-November. The full program tuition is \$5,000 - which includes a non-refundable deposit of \$500 (due at the time of application), and the remaining balance of \$4,500 must be paid by the start of classes or in scheduled payments.

Loutet Farm and the Edible Garden Project (Loutet Farm, n.d.; Edible Garden Project, n.d.)

A strong example of success that effectively involves youth through education and agriculture, and grows, distributes and sells sustainable local produce. These agricultural programs are “fostering a new community of responsibly minded and enthusiastic gardeners” in the North Shore of North Vancouver (Dagenais, 2016).

Background and Purpose

Loutet is the North Shore's first and only urban farm and farm-gate marketplace. It came into existence in February 2011 at the underutilized south end of Loutet Park in the City of North Vancouver. It is designed for local folks to become involved in and better understand food production and to have greater access to healthy and locally grown produce. Loutet Farm is managed by the North Shore Neighbourhood House Edible Garden Project (EGP) - a program that is cultivating a network that grows and shares local produce, and supports sustainable regional agriculture and community in the North Shore.

Land

EGP currently operates over an acre of farm and gardens in the North Shore. Farmland includes Loutet Farm, a half-acre social-enterprise farm, located on public-park land in the North Shore, as well as a one-third acre farm on Sutherland Secondary School. All the food grown on these farms is sold twice a week at farm-gate sales.

The EGP also operates a number of gardens, which are part of the Sharing Gardens program. Sharing Gardens are made up of a number of areas of land (in backyards, front-yards, roof tops, boulevards, and parks) throughout the North Shore that have been repurposed for crop production. The food grown on the Sharing Farms is distributed to those who are most in need in the North Shore.

Tenure/Management

Loutet farm is managed under the Edible Garden Project and is supported through the North Shore Neighbourhood House in partnership with the City of North Vancouver and the University of British Columbia.

Target Producers/Crops

Loutet Farm engages with several target audiences to cultivate a strong, diverse, and supportive community through agriculture. One such target audience is students. Loutet Farm brings students out of the classroom and outside the gardens, where students have a hands-on opportunity to learn about the growing cycles of produce. Students also harvest, sell, and enjoy the produce themselves. Loutet Farm is located across the road from an elementary school and preschool, which fosters strong student involvement at the farm.

GardenSmart Workshops are for locals who want to learn more about growing their own food. These workshops are offered to people of all ages, and are also a great opportunities for people to network and share knowledge around farming and food.

A statistic on the EGP website speaks to the significance of volunteer participation and production to the growth and success of the EGP over a 10 year period: “**2006:** \$30,000 budget, one part-time staff, 20 volunteers, and 6 sq meters growing food. **2016:** \$275,000, 3 full time and 5 part time positions, over 500 volunteers, over 3500 participants each year, and 5260 sq meters growing food.”

Loutet Farm offers drop-in and group volunteer opportunities to help people learn about growing food and learn new skills. Volunteer opportunities are also offered through the Sharing Gardens program. The Sharing Gardens are managed by dedicated volunteers, who plan, cultivate and manage areas of land (in backyards, front-yards, roof tops, boulevards, and parks) throughout the growing seasons. The Sharing Gardens are open to everyone to visit and learn about growing food, to meet new people, and to build community connections. The veggies and fruit grown on the Sharing Gardens is distributed to those who are most in need, living in the North Shore. The food is distributed through social service partners, who include: the Harvest Project, the Greater Vancouver Food Bank, and the Sage Women’s Transition House.

Economics/Sources of Funding

Funds generated through the sale of the produce (farm-gate sales) are directed back into the operations of the farm, which allow the farm to also offer a range of gardening and farming workshops like beekeeping and hands-on learning opportunities for young and old, while creating valuable jobs for North Shore residents.

Haliburton Farm (Haliburton Community Organic Farm, 2019)

Illustrates a strong example of a small-scale organic sustainable, community-based farm that works with the land and local ecosystems.

Purpose and Background

Community involvement and education around urban biodiversity enhancing techniques. Haliburton Farm practices organic, small-scale farming restore ecosystem health.

Other points of purpose (these points were copied directly from the Haliburton Farm website)

- involve the community in sustainable food production
- support a local sustainable food system
- demonstrate the viability of small-scale farming
- restore and enhance biodiversity within farming systems
- demonstrate a cooperative community farming system
- educate about agroecology

Land

The farm is publicly-owned and located within Agricultural Land Reserve (ALR).

The farm is just under 10 acres in size, and is in Saanich, BC.

Tenure/Management

There are 6 separate businesses that operate under the Haliburton Community Organic Farm, using an incubator plot program.

Volunteer opportunities at Haliburton Farm are offered through the Haliburton Biodiversity Enhancement Project, which is focused around ecological restoration of degraded wetland, forest and meadow habitats. The volunteers also focus on improving the ecological value of food production areas of the farm by planting native plant species, and installing native bee cavities and bird houses.

Haliburton Farm is zoned as a Rural Demonstration Farm, which brings with it obligations to provide educational opportunities. Educational partner, Gaia College²⁰, runs their classroom courses on Haliburton Farm. These courses offer practical hands-on learning experience on growing certified organic vegetables, fruit, herbs and flowers using ecological, place-based and holistic philosophy.

Target Producers/Crops

There are 6 separate businesses that operate under the Haliburton Community Organic Farm.

Haliburton Biodiversity Enhancement Project aims to preserve and restore biodiverse ecological areas (wetland, meadow, and forest habitat) within the farm property, and serve as a demonstration and teaching site for urban biodiversity enhancement techniques.

Certified organic vegetables, fruit, eggs, native plants.

Economics/Sources of Funding

Sources of funding come from:

- Education and workshops;
- Farmstand;
- Farmers Market: year-round and seasonal;
- Farm tours offered to school groups, community groups, and public;
- Food box;
- Wholesale: pricing and delivery to local businesses.

²⁰ See <https://www.gaiacollege.ca/> for more information.

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