SUPPLY MANAGEMENT, COMMUNITY FOOD SYSTEMS AND THE DAIRY INDUSTRY IN THE FRASER VALLEY, BRITISH COLUMBIA

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ABSTRACT

It has become increasingly obvious that a growing number of ecologically and socially destructive trends are linked to the global integration and commodification of agriculture systems and food. This thesis investigates the connections between ecological, and socio-economic, sustainability and Canada's supply management system. Supply management is a regulatory framework that, among other objectives, targets price and income stabilization for agricultural producers. Although supply management was not developed to promote sustainable development, it may be possible to use this institution to enhance environmental and social health. This thesis explores this possibility. Specifically I explore - through a Grounded Theory methodological approach involving qualitative in-depth interviews; and informal interviews - the ecological and socio-economic costs and benefits of supply management in the dairy industry in the Fraser Valley, British Columbia.

Through this research, I found that supply management in the dairy industry has a greater potential to support the local economy and positively influence socio-economic equity than non-supply managed regions such as the dairy industry in the western United States. I also discovered that these non-supply managed regions seem to experience a greater degree of surface and ground water contamination from dairy operations. This suggests that price instability may be a barrier to environmental stewardship; or, that income stabilization accorded by supply management has encouraged ecological sustainability. My analysis also reveals that the loss of supply management - in the current global trading environment - has the potential to result in a loss of domestic control over environmental health regulations. In conclusion, I suggest that the deregulation of supply management would quite likely represent a transfer of power from the local dairy farmer to international, and uncontrollable, forces. Consequently, any further policy adjustments toward deregulation should not be made until careful investigation of the ecological and socio-economic cost and benefits are evaluated on a qualitative level. I recommend that further research is necessary to clarify these indirect and direct connections between sustainability and supply management, and that coalitions between Community Food System advocates and supply management supporters would benefit both of these groups and the public at large.
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CHAPTER 1: INTRODUCTION, BACKGROUND INFORMATION AND RESEARCH OBJECTIVES

THE STUDY AND ITS PURPOSE

"As a global community we are witnessing a sweeping transformation of agricultural practices around the world. In a remarkably short period of time, vast portions of the earth's surface have been rearranged to meet exigencies of perceived exchange value of commodities in globally organized markets of food, fibre, timber and bioconsumables" (Weiskel, 2000).

The outcome of globalization, and the global economic integration and commodification of agricultural systems and food, has become increasingly controversial. Many debates relate to globalization's effect on, and potential for, ecological, social and economic sustainability. As a researcher I am concerned with the connection between ecological, social and economic health and the production and distribution of food in Canada. Consequently, I feel it is timely and valuable to investigate whether Canada's food and agriculture supply management system addresses, or exacerbates, our current sustainability challenges. I am specifically interested in studying the supply management system in the Fraser Valley dairy industry of British Columbia (BC). The dairy industry and dairy farmers in the Fraser Valley are of particular interest due to: (a) their historical connection to the creation of the Canadian supply management system; and (b) the recent controversy surrounding the dairy supply management system in the international policy arena.

Supply management emerged in the middle of the twentieth century out of a long struggle for market and income stabilization. Over fifty years later - according to the provincial government's recent report *Review of Regulated Marketing in British Columbia, Part One, Historical Overview* - the regulated market system has met its original stated objectives for supply management commodities by: improving and stabilizing producer income; improving the stability and predictability of commodity prices by dampening volatile price swings; ensuring, stable predictable and adequate supplies; and fostering the viability of small closely held (family) farm business (BCMAFF, 2002).

Consequently, supply management was originally designed to counter imbalances in market power, not to foster ecological and socio-economic sustainability. Despite this, I feel the connection between sustainability and supply management is a worthy topic for three reasons. To start, both imperfect competition resulting from imbalances in market power, and ecological degradation can be viewed as a market failure. As a result, if supply management has, to a degree, offset problems associated with imbalances in market power, then perhaps it has the potential to remedy other market failures such as ecological degradation.
Secondly, supply management offers an institution that has the potential to correct basic qualitative problems that the current system overlooks. The final rationale for exploring a connection between supply management and sustainability relates to the potential Community Food Systems have for creating an ecologically healthy and equitable future. As it becomes increasingly obvious that a growing number of socially and ecologically destructive trends are inextricably linked to the global integration and commodification of agriculture systems and food, I believe Community Food Systems represent a unique opportunity to remedy many of these problems. The question is: does supply management contribute to a Community Food System Vision?

RESEARCH OBJECTIVES

The impact of trade liberalization on food production has been immense. This contentious issue gives rise to questions such as: Are the changes that are underway in world agriculture compatible with sustainable food production? Supply management is an alternative to free trade that encourages the local consumption of local products. However, does supply management contribute to sustainable development, and if so, how will sustainability be effected if supply management is deregulated? The objective of this thesis is to explore whether the dairy industry's supply management system in British Columbia and Canada has the potential to act as a tool in helping to address many of Canada's current ecological and socio-economic sustainability challenges; or whether it acts as an institutional barrier in the transition of the dairy industry towards ecological and socio-economic sustainability.

To understand what the ecological and socio-economic costs and/or benefits of supply management are, I have developed an exploratory investigation into what positive and/or negative effects would occur in the absence of supply management. The purpose of this thesis is not to quantify the socio-economic and ecological costs and benefits of supply management, nor is it to further analyze the claimed loss in aggregate economic welfare that accompanies rent seeking that occurs in the dairy industry, but rather the focus is to identify potential positive or negative trends that may result from deregulation, provoking further research on the specifics.
Research Questions
The following research questions are addressed in the context of the Fraser Valley, BC dairy industry:

- In the food chain of farmers, processors, retailers and consumers: Who has market power in the context of the BC dairy sector? How might this change with the dismantling of the supply management system? How would the effects of this change affect the competitiveness of BC dairy farmers?
- What are the ecological costs and benefits of deregulating, or eliminating Canada’s supply management system, in the context of the dairy industry in the Fraser Valley, BC?
- What are the socio-economic costs and benefits of deregulating the dairy industry, in the context of the Fraser Valley, BC?

To examine these research questions I (1) review the literature on neoclassical economics and sustainability; (2) review the history and literature on supply management; (3) interview stakeholders in the dairy industry; and (4) test trends identified and assertions made by interviewees with additional literature. (For further information on Methods see Chapter 2: Methods)

THE GLOBAL MARKET

During the past two centuries the process of industrialization has transformed the character of, and the relationship between, society and the ecosystem. A recent defining feature of this trend is the global integration of national economies, technology and production. Conventional economic theory, (called neoclassical or neoliberal economics), is the dominant theory and basis for practice for organizing the goods and services in this global system (Weintraub, N.D.). Using the term “neoclassical” very broadly, “it includes all theories that are based on the economizing behavior of individual value-maximizing agents. This term would embrace standard textbook theories of production and consumption; the property rights and transaction costs approach to industrial organization, law, history, and social institutions; public choice theories of politics and constitutional arrangements; and even Austrian economics” (Lowenberg, 1990. p.2). Neoclassical economics revolutionized a linear view of value theory¹ and in the words of Allan Greenspan (2000, par.2) the

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¹ Value Theory: The theory about why goods have value (The Library of Economics and Liberty)
increasing interaction among national economies or globalization - that followed the ‘marginal revolution’ - "has engendered benefits that have significantly exceeded their costs over the years."

For most of the last two decades, the vision of a global economy has been built on ‘free’ markets, ‘free’ trade and the relatively free flow of investment. The idea is that if markets perform well, incomes will increase and individuals’ and societies’ well-being will be maximized. The market has been so successful that it has become the dominant way of distributing resources and turning commodities into consumer goods the world over. However, it has been well documented that many environmental problems illustrate areas where the market fails to recognize the range of goods and services provided indicating “market failures”. It has been understood for some time that if certain conditions are not met, the market fails because the prices generated by such markets do not reflect social and ecological costs and benefits. There are many types of market failures, a few examples are: ill defined or non-existent property rights; market imperfections, specifically lack of competition in the form of local monopolies, oligopolies; and public goods that should not be provided through the market because excluding free riders will reduce social welfare (Panayotou, 1993. p.34).

More recently there has been a growing number of criticisms of the neoclassical discipline itself. For example, it has been documented from a post-modern perspective that many activities associated with this system are both associated with increasing inequality, and a threat to the stability of the global ecosystem. This is not only because of market failures, but is also due (among other things) to the inability of the conventional economics to recognize that the economy exists within the confines of the ecosystem. From this perspective it is criticized not because conditions have changed over time but because the fundamental assumptions from which it has derived are fundamentally flawed.

To help illustrate the immense impact neoclassical economics has had on global society, I will briefly summarize a few of the major concerns related to neoclassical economics - including critiques of the discipline, and problems associated with market failures. This section will outline: the modern discipline of economics and problems with reductionism; false assumptions; market failures and the ecosystem; and accounting limitations, economic well-being and inequality.

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2 Marginal Revolution or the discovery of the theory of marginal utility is the understanding that the utility or value of each additional unit of a commodity—the marginal utility—is less and less to the consumer (The Library of Economics and Liberty, N.D.).

3 The standard economic definition of market failure is: An imperfection in the market mechanism that prevents optimal outcomes (Schiller, N.D.).
The Modern Discipline of Economics and Problems with Reductionism

Many post-modern critiques of neoclassical economics focus on the reduction of the discipline to quantitative methods. The core theory that dominates economics in most universities today involves mathematical models of individual choice. Economics today is largely pursued as a science. It is embedded in the Cartesian model of the world, or Cartesian model of objectivity, which has been defined as an abstract, general, detached, emotionless approach (Ferber and Nelson, 1994. pp.24-25). Consequently,

"... economics increasingly has come to be defined not by its subject matter but by a particular way of viewing the world. The phrase 'the economic approach to' is commonly used to mean viewing a problem in terms of choices, especially individual welfare or profit maximizing choices of autonomous rational agents" (Ferber and Nelson, 1994. p. 25).

Economics is derived from Oikonomia, which referred to the organization of household production and management in ancient Greece. This was formally developed into an academic discipline by Adam Smith who "... saw economics as a two-fold problem, one of which was how society was organized by exchange, the other of which is how society was 'provisioned' in what today would be regarded as a more ecological sense" (Boulding, Cited in Ferber and Nelson, 1994. p.23). In general classical economists (the precursor to neoclassical economists) were interested in the growth of wealth of nations and concerned with the distribution of wealth among economic classes (World Bank, 1999).

Most contemporary textbooks have definitions similar to the following: "Economics is the social science which examines how people choose to use limited or scarce resources in attempting to satisfy their unlimited wants" (Schenk, 1998. p. 1). The root of this modern definition took shape with what is called the "marginal revolution." The marginal revolution represented a significant departure from the classical theory of value. "The [neoclassical] theory held that the utility (value) of each additional unit of a commodity—the marginal utility—is less and less to the consumer" (The Library of Economics and Liberty). The neoclassical perspective was related to the relationship between the object and the person obtaining the object, and was significantly different than the classical view of value, which understood value to be a fixed property inherent in an object (Weintraub, N.D).

Further, the success of neoclassical economics is largely connected to the "scientificization" or "mathematization" of economics (Weintraub, N.D.). It was W. Stanely Jevons who defined economics as: the study of "the mechanics of utility and self interest" (Georgescu-Roegen Quoted in Daly and Townsend, p.75. 1994). At the end of the nineteenth century when Jevons, Walras and Menger independently developed their theories of marginal utility, optimism about the future was linked to the successes of technology. Progress was to be "assured in a society that used the best
scientific knowledge. Social goals would be attainable if scientific principles could organize social agendas” (Weintraub, N.D.). “And while economics has made great strides since, nothing has happened to deviate economic thought from the mechanistic epistemology of the forefathers of standard economics” (Georgescu-Roegen Quoted in Daly and Townsend, p.75. 1994).

Current definitions of economics involve the notions of choice, exchange and scarcity - and have largely lost the sense of economics as a process of provisioning the human race. Mainstream growth theory does not require a distributional mechanism to generate a stable growth path. Instead, it relies on a neoclassical production function, and “... economic growth ... [is] studied as if society were monolithic, making intertemporal choices as a single individual would” (World Bank, 1999. par.5). This model is known as neoclassical growth theory and does not require an element of distributional equity that would complicate these models further (World Bank, 1999).

The pursuit of economics as a mechanistic science has led to an entrenched understanding of the global economy as separate from the environment, or a closed system whose productivity and growth are not constrained by the ecosystem. This in turn allows the supply and demand of commodities to generally regulate themselves in isolation from biophysical context. The discipline still fails to acknowledge that “the economy [is] not in isolation, but rather ... an inextricably integrated, completely contained, and wholly dependent subsystem of the ecosphere” (Rees, 1995. p.347).

**False Assumptions**

One of the main assumptions embedded in the economic notion of individual choice is related to the inherent properties of individual behaviour. “Economic theory builds on the propensity of individuals to act so as to optimize their own interests, a propensity clearly operative in market transactions and in many other areas of life” (Daly and Cobb, 1994. p.5). Economics generally equates intelligent pursuit of private gain with rationality. This implies that other modes of behaviour are not rational. Further, the deductive nature of conventional economics assumes that only commodities consumed by an individual contribute to that individual’s utility. The theory ignores behaviour directed at helping others, and actions targeting the public good. Rational humans seemingly do not feel emotion, grow and learn, act “irrationally” or exhibit any characteristics that are often associated with being human such as giving a gift. Consequently, none of these quintessentially human behaviours are included in the economic accounting of well-being. The quantification and monetization of only some activities leaves out entire sectors of the economy (the informal economy), and ignores wider realities of the health support systems of the planet (climate regulation, carbon sink functions, water regulation, flood control, biodiversity, etc.).
Market Failures, Neoclassical Economics and the Ecosystem

The critics of neoclassical economics advocate that in many cases the global market threatens the stability of the global ecosystem. Destructive trends such as the decimation of renewable natural resources, stratospheric ozone depletion, air and water pollution, climate change and species extinction are increasing in numbers and growing in severity. These trends, according to the critiques on conventional economics, are partially created and reinforced by the global economic integration of the planet.

A large segment of neoclassical economics is dedicated to studying the allocation of scarce resources, and environmental problems related to production, or externalities. Most environmental economists, apply the same models of economic behaviour, which are used to analyze the rest of the economy, to the environment (Jacobs, 1993. p.xv). As with other economic commodities, demand is "expressed by households and firms in markets; [and] their preferences are self interested and rational’ (profit maximizing and consistent)” (Jacobs, 1993. p.xv). Consequently, the objective of environmental economics is to produce a socially ‘optimal’ use of resources. "This is defined as the point at which the benefits of those participants in the market exceed their costs by the maximum possible amount. The neoclassical approach is particularly concerned that this should be achieved ‘efficiently’, that is, most cheaply for society as a whole” (Jacobs, 1993. p.xv). However, the growing number and severity of ecological issues has not only been attributed to the global economic system governed by market forces. The economic system has also been accused of encouraging ecological degradation (Jacobs, 1993. p.39).

The market can be defined as: "the existence of a number of suppliers and producers free to choose with whom they trade, where changes in price mediate between supply and demand” (Jacobs, 1993. p.25). However, because each decision is made privately on the basis of individual interest, the collective consequences are undetermined (Jacobs, 1993. p.25). According to Jacobs, market forces "come into being” at the level of the whole economy. For example, the majority of consumer and firm decisions take place at the individual level in the market and as a result, there is no monitoring of the collective consequences. “Market forces are thus the overall sum of many millions of separate individual parts” (Jacobs, 1993. p.24).

Adam Smith’s invisible hand that is meant to guide the market can:

"equally be an ‘invisible elbow’ which brings general ruin ... The anatomical choice is not arbitrary. Elbows are some times used to push people aside in the desire to get ahead. But more often elbows are not used deliberately at all; they knock things over inadvertently. Market forces cause environment degradation by both methods ... Some times there is a deliberate and intentional destruction ... but more usually degradation occurs by mistake ..."
small individual decisions add up inexorably to large collective ones, and no one is counting” (Jacobs, 1993. p.25).

To put this another way, people do not deliberately: cause greenhouse effect; intend to destroy the rainforest; deplete fish stocks; erode topsoil; and pollute water sources. Nevertheless, these problems emerge as a result of the pursuit of individual self interest.

Ecological degradation occurs partly because environmental problems are rarely experienced – at least to the full extent – by the individuals who cause them (Jacobs, 1993. p.27). In other words the link between the decision maker and the effects of their actions is absent; or the retail price of many commodities do not include their full social and ecological costs. Economists refer to this phenomenon as an externality. Most examples of pollution and resource depletions are externalities. A few example of where externalities occur are with: common resources such as ocean fishers; public goods such as air; and future generations (Jacobs, 193. p.32).

Although environmental regulations exist in an attempt to mitigate these problems, escalating ecological degradation demonstrates that current regulations are not adequate. "The result is an economy which may fairly (if not elegantly) be described as environmentally unconstrained. What happens to the environment is determined by arbitrary interplay of markets forces not by planned decision makers” (Jacobs, 1993. p.25). Furthermore, although some counties employ strong regulations, weaker regulations will often occur in other countries - and since both economic systems and ecological problems are global, “the result is that the overall impact is mostly unplanned (Jacobs, 1993. p.25).

Moreover, market forces create incentives for economic growth. Where market forces exist, competition tends to stimulate increased production (Jacobs, 1993. p.25). And when owners and managers of a firm are motivated by forecasts of increasing profit, growth is attractive. However, even if decision makers do not desire growth, it may be essential to ensure viability (Jacobs, 1993. p.26). “It is the combination of these two features of market forces which defines the economic system in relation to the environment” (Jacobs, 1993. p.26).

“In general market forces thus encourage the constant expansion of production [and] such expansion can have obvious environmental implications if resources come to be over-exploited and waste emissions exceed absorption capacities. And clearly where the overall environmental impact of economic activities is unconstrained, that is what tends to happen” (Jacobs, 1993. 26).
Accounting Limitations, the Well-Being of Society and Inequality

Endemic in the doctrine of neo-classical economics is the understanding that if markets perform well, people in general will benefit. Following from this logic, most government policy is geared around one single measure of economic well-being: the Gross Domestic Product\(^4\) (GDP) or, Gross National Product\(^5\) (GNP). “Almost all economists view growth in GNP per capita, as a sign of a healthy market, which means for them a healthy economy” (Daly and Cobb, 1994. p.62-63). There has been some recognition that GDP only measures some aspects of welfare, so other indicators such as Physical Quality of Life Index, Infant Mortality, and Life Expectancy etc. have been developed. However, the management of national economies in countries like the United States (US) and Canada are still devoted almost exclusively to the pursuit of GDP growth per capita.

The question becomes: does economic growth, as measured by GDP, actually contribute to the total well-being of society? According to Robert Lane in *The Loss of Happiness in Market Democracies*, there is a paradox. In the market democracies we can frequently detect growing unhappiness or well-being in the midst of growing GDP per capita. In addition, beyond a certain point (approximately $8000 international dollars/year) there is no further increase in objective measures of well-being with income.

Lane asks why, if the purpose of the market is to maximize utility, do indexes of subjective well-being decrease in market democracies whose GDP per capita has been rising for decades. He concludes: “the reason markets in advanced economies fail to do much to promote, let alone maximize, well-being is that the things that contribute most to well-being, especially companionship and family life, are market externalities. And commodities are poor substitutes for friends. Our accounting system reflects this bias” (Lane, 2000. p.8).

Richard Wilkinson, in *Unhealthy Societies: The Afflictions of Inequality*, explains that “at all stages in human societies, whether rich or poor, the quality of social relations has been the prime determinant of human welfare and the quality of life” (Wilkinson, 1996. p. 211). The evidence in his book demonstrates, by looking at eight different studies, that national mortality rates in both ‘developed’ and ‘less-developed’ countries decreases, as income becomes more equitable. Furthermore, societies that are more egalitarian, or have the smallest income differences between the rich and poor, are both healthier and more socially cohesive than others (Wilkinson, 1996. p.225). Inequality imposes

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\(^4\) Gross Domestic Product (GDP) - Dollar value of all goods and services produced within the geographical boundary of a country. This is the usual measure of production.

\(^5\) Gross National Product (GNP)- Dollar value of all goods and services produced by the nationals (citizens) of a country. Not used very much anymore.
a number of costs on the economy and society. For example as inequality increases, a large portion of the population changes from being a net contributor to a society's economic welfare to being a net burden. Wilkinson illustrates that the greatest costs are not just the blighted lives, insecurity and frustration which relative poverty causes (nor the costs associated with turning potential contributors into welfare dependents), but rather the reduction of good will and co-operation among the public at large (Wilkinson, 1996. p.225-6). He concludes, "...[that] health is now almost unrelated to measures of economic growth and yet closely related to income distribution [that] suggests that priority must be given to the satisfaction of social needs" (Wilkinson, 1996. p.221).

It has also been demonstrated that a decentralized system, in which many political decisions are taken at the communal or district level, raises citizens' well-being. It is not unfettered growth, left to the whims of the market that leads to a healthy society. People derive more satisfaction when they have control, or a greater possibility of directly influencing political decisions (Frey and Stutzer, 2002. p.11).

Unfortunately, real world data illustrate that as rich countries and the world get richer, income distribution becomes less equitable. Economic trends reveal that, globally, all the gains in world income in the middle of the 1990's went to the richest 20%, while the income of those in the bottom 50% actually declined (BBC, 2002). Recently in a World Bank working paper authors estimated that the inter-national6 Gini coefficient increased between 1988 and 1993 from 55 to 58 (Milanovic, cited in Lundberg & Milanovic, 2000). (The Gini ranges between 0 for complete equality and 100 if a single person receives all income.) Milanovic also found that the world7 Gini coefficient increased from 63 in 1988 to 66 in 1993 or from 78 to 80 depending on the style of evaluation (Cited in Lundberg & Milanovic, 2000). Trends within Canada mirror these findings. For example, wealth inequality increased between 1984 and 1999; only the top ten percent have increased their share of total net worth (Morissette, Zhang & Drolet, 2002). Furthermore, in another World Bank paper, Lundberg and Squire reported that trade liberalization "is correlated negatively with income growth among the poorest 40 percent of the population, but strongly and positively with income growth among remaining groups, in a sample of 38 countries between 1965 and 1992. The costs of adjusting to greater openness are borne exclusively by the poor, regardless of how long the adjustment takes" (Cited in Lundberg & Milanovic, 2000. Par. 7).

As the Canadian government continually embraces a more market-oriented strategy targeting growth, mechanisms that were implemented after World WarII to create equity and a social security

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6 Inter-nation inequity refers to differences between countries' average per capita incomes (or GDPs).
net are slowly eroding away. Consequently, as GDP increases: inequity is climbing; individual happiness is declining; local control of resources is increasingly left to the whims of the market and international forces; and ecological health is deteriorating. In light of this, it is crucial that the Canadian government formulate, and accord priority, to policies targeting qualitative goals that reach beyond enhancing GDP.

SUSTAINABILITY AND AGRICULTURE IN A GLOBAL SYSTEM

Globalization embraces a market approach to the production and distribution of goods and services, and now includes the majority of regions and commodities across the world including many agricultural products. The dominant trends have been toward: industrialization, with an increase in the centralization of production and processing; an increase in corporate control in production and marketing and labour decisions (Welsh, quoted in Garrerr and Fonstra, 2001).

In the United States and Canada, as in most Western Countries, the food and agriculture system has changed dramatically in the last 50 years. This transformation has drastically affected the production of most agricultural commodities including most dairy products.

The process of the industrialization of agriculture has been described as: “the development of advance management systems, rapidly advancing technology that places a premium on change and future mechanized processes and change in the relative prices of labour and capital” (Gregor, 1982. p.1). The resulting changes have been numerous, rapid and far-reaching. Most significant is the “weakening of the production link of the farms and its immediate environment and the strengthening of connections with outside resources through the increasing use on non farm inputs, which comprise machinery, fuel, fertilizer, pesticides, feed supplements and mixing and many other goods and services” (Gregor, 1982. p.1). As a result, both capital and labour productivity have increased by dramatic proportions. Food surpluses are often a problem, and the by-products of the intensification of production now range from increasing drains on water and soil and energy resources, to poisoned ground waters, food-borne illness, loss of biodiversity, social inequity, toxic chemicals in foods and fiber, loss of beauty, loss of species and wildlife habitat and myriad other environmental and social problems (Gregor, 1982; and Kimbrell, 2002). One response to these growing problems is a recent emergent trend in agriculture toward the use of biotechnology. Biotechnology refers to a set of techniques that make use of cellular and molecular processes to

7 World inequity refers to income inequality between all individuals in the world.
solve problems. With respect to agriculture, biotechnology has been used to manage pests, enhance the nutritional content of food products, and immunize crop varieties against pest and pesticide damage. Although biotechnology produces many immediate benefits – such as allowing reduced use of conventional pesticides – there is no consensus about its long-term impacts on human health and the environment.

In 1998, a conference organized by The International Forum on Food and Agriculture (IFA) brought together fifty-four agricultural academics, researchers, non-government leaders and professionals (from twelve countries) to articulate the full range of consequences of global industrial agriculture. The group collectively created and endorsed a statement, called the ‘Vancouver Statement’, to express their opinion on the negative impacts of the industrialization and globalization of agriculture.

The Vancouver statement:

"We believe that the industrialization and globalization of food and fiber imperils humanity and the natural world. Reducing farming to a monocultural, synthetic, transnational corporate business threatens the health, nourishment, right livelihood, and spirituality of communities and the earth. It is insane to believe that we must poison land and water and waste the soil in order to feed and clothe ourselves. Five decades of the so-called Green Revolution have not only led to the destruction and contamination of water, soil, biodiversity, and human communities, but exacerbated hunger worldwide. One of the most critical impacts of industrial agriculture is climate change, which will destroy the natural basis of agriculture itself. The patenting of life, corporate ownership and manipulation of our genetic heritage is one of the greatest threats ever imposed by industrial agriculture: the human right to feed, clothe and shelter ourselves and our families is at stake. ..."

This crisis is rooted in the transformation of an essentially agrarian fully integrated system, into an industrialized system characterized by monoculture production with enormous side effects. Andrew Kimbrell in Fatal Harvest, outlines several myths associated with industrial agriculture and details a more accurate description of the effects of the system. I will summarize four of these myths, and his responses to each (including additional information), to demonstrate the wide reaching effects of industrial agriculture.

**MYTH I:** Industrial Agriculture Will Feed the World.

**RESPONSE:** Global hunger results from denied access to food through poverty (and landlessness in many ‘developing’ countries), not lack of food. Kimbrell argues that industrial agriculture actually increases hunger by raising the cost of farming, by forcing tens of millions of farmers off the land.
and by growing primarily high profit export and luxury crops. In fact we now have more food per person available on the earth than at any other time in history (Kimbrell, 2002. p.50-51). Food is a basic human need, yet even in countries like Canada and the United States many people do not have access to an adequate diet. Despite achievements of science and technology that have revolutionized the production and distribution of food, hunger and malnutrition still threaten the health and well-being of millions of people around the world. In the US, the world’s wealthiest nation, approximately 30 million people are reported to be unable to buy enough food to maintain good health (Koc et all, 1999. p.1). In 1996 it was estimated that 3 million Canadians used Food Banks (more than 501 communities had Food banks) (Power, 2001 p.31).

MYTH II: Industrial Food is Cheap.

RESPONSE: Food produced by conventional agriculture completely ignores the externalized costs of food that do not appear on the grocery checkout receipts. According to Kimbrell, we pay tens of billions of dollars in taxes, medical expenses, toxic cleanups, insurance premiums and other indirect costs to subsidize industrial food producers.

Ecological Costs
An ever-increasing use of pesticides and fertilizers pollutes water, soil and air. According to the United States Department of Agriculture (USDA) pesticide use on major field crops, fruits and vegetables nearly tripled from 1964 to 1997 (Jackson, 2002. p.43). In the Lower Fraser Valley, expenditure for fertilizer and lime has almost doubled in a period of ten years (Schreier et al., 2000). 1.3 billion tons of manure is produced from animal factories each year in the United States. Containing chemicals, antibiotics and hormones, the manure has leached into rivers and water tables - polluting drinking- water supplies and causing harm and death to fish (Kimbrell, 2002. p 55).

In the United States 90% of all cropland is losing soil, on average, seventeen times faster than replacement rates. It has been estimated that worldwide damage due to erosion costs $US 44 billion. To bring erosion under control in the United States would require an approximate expenditure of $US 8.4 billion annually (Jackson, 2002. p43).

Industrial agriculture has offset the damaged caused by erosion by using fertilizer produced with the use of fossil fuels. This is extremely inefficient in terms of material and energy usage. In the US, Jackson (2002) estimates that it requires ten fossil fuel calories to produce one food calorie (p.43). This is a dangerous dependence on fossil fuel according to several prominent international petroleum geologists; global oil production is expected to peak and begin its permanent decline

The results of this system on biodiversity have been tremendously devastating. It has been estimated that in the United States alone, three-quarters of all agricultural biodiversity\(^8\) has been lost in the last 100 years (Jackson, 2002. p 43).

The long-distance transportation of industrial foods resulting from the global system has also created serious negative ecological consequences. On average, food now travels 1,300 miles from field to mouth. Vehicles moving food around the world burn fossil fuels, exacerbating global warming, air and water pollution (Kimbrell, 2002. p.55).

Agriculture and Agrifood Canada has identified water quality and use; use and management of nutrients, pesticides and energy; land use and management; soil quality; agroecosystem biodiversity; and climate and air quality as significant environmental issues related to the agriculture and agri-food system in Canada (Agriculture in Harmony With Nature II, 2001).

**Health and Social Costs**

Numerous studies have verified the suspected links between agricultural pesticide and diseases in humans. While direct links are often difficult to establish, a summary of cancer risks among farmers due to pest control chemicals includes: Hodgkin's Disease, multiple melanoma, Leukemia, skin melanomas, cancer of the lip, stomach and prostate. The herbicide 2,4-D has been associated with a two to eight-fold increase in non-Hodgkin’s Lymphoma in agriculture regions. Other reports indicate that several pesticides can reduce the immune systems ability to fight infectious agents (Jackson, 2002. p.43).

Kimbrell explains that farming is among the most accident-prone industries in the U.S. The sector (including fishing and forestry) experiences accident rates nearly six times the national average. In California, migrant workers are 15 times more likely than non-migrant farm workers to manifest symptoms of pesticide exposure. It has been estimated by the US Environmental Protection Agency (EPA) that 300,000 farm workers suffer acute pesticide poisoning each year (Kimbrell, 2002. p.55).

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\(^8\) Agricultural biodiversity has been defined as a system that encompasses the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for, and in support of, food production and food security (FAO, 1999).
Industrial agriculture has dislocated millions of farm workers and thousands of farm communities. In the United States - between 1987 and 1992 - 32,500 farms were lost annually; of these 80% were family run (Kimbrell, 2002. p.55). In Canada there has been an unprecedented and dramatic net farm income collapse (Qualman, 2001). More than 75,000 small and medium sized farms disappeared from 1979 to 1996 (Boyens, 1999. p.1). Rural communities in both countries are deteriorating socially and economically, and consumers in the last half of the century have gradually lost the knowledge about where their food comes from. In the United States the farmers’ share of the food dollar has declined from 41% in 1920 to 9% in 1990 (Smith quoted in Garrerr and Feenstra, 2001). In Canada in 1975, 13% of the retail value of bread went to farmers; in 2001 that number dropped to 4% (Qualman, 2001. p.2-3).

Current costs do not include government payments to ex-farmers and farm workers driven into poverty. Kimbrell explains that as farm size and absentee ownership increase (both endemic to industrial agriculture) social conditions in the local community deteriorate. Kimbrell concludes that although it is difficult to put a dollar value on the loss of farmers and communities, studies have put the costs of such dislocation since WWII in the tens of billions of US dollars (Kimbrell, 2002. p.55).

**MYTH III: Industrial Agriculture Benefits the Environment and Wildlife.**

**RESPONSE:** According to Kimbrell, industrial agriculture is the single largest threat to the earths’ biodiversity. Large-scale uniform plowing, planting and harvesting techniques decimate wildlife habitats, while massive chemical use poisons the soil and water and kills countless plants and animals (Kimbrell, 2002. p.60).

**MYTH IV: Biotechnology Will Solve the Problems in Industrial Agriculture Through Increasing Production and Reducing Pesticide Use.**

**RESPONSE:**

*Increasing Production*

Kimbrell illustrates that the world produces more than enough food to feed current populations. The hunger problem lies not with the amount of food produced, but rather with the distribution system. And, genetically engineered (GE) types of seed do not actually increase overall crop yields as often claimed. An independent study demonstrates that GE seeds do not boost food production.
**Reduced Pesticide Use**

Central to this debate is that biotechnology will reduce pesticide use by creating plants resistant to insects and other pests. However, a study by the USDA in 2000 demonstrated that there is no overall reduction in pesticide use with GE crops.

Biotech food also brings with it other ecological threats. For example, professors William Muir and Richard Howard (2001), of Purdue University, found that genetically engineered (GE) medaka fish were more successful at mating than non-GE medaka, due to their larger size. At the same time, the offspring of the GE fish were much less likely to live to maturity. The researchers also demonstrated, through computer modeling, that introducing a mere 60 of these GE fish into a population of 60,000 could push that population to extinction. Studies also have shown that GE crops can cross-pollinate with related weeds, possibly resulting in "superweeds" that become difficult to control. According to Greenpeace, a recent study found that a genetically modified plant was 20 times more likely to breed with a related weed than with natural plants.

Today agriculture is at a crossroads. As in the United States, many national and international forces are bringing major changes in Canada's agriculture and food system. While chemical pollution has been a major problem in the 20th century, biological pollution from genetic engineering poses even more hazards as we start the 21st century. Unlike chemicals that are released into the environment, genetically engineered organisms are living beings that have the potential to reproduce and spread uncontrollably, with no possibility of containment or clean-up.

In combating these forces, Canadians must create a vision and a plan for charting a new path toward an agriculture system that is ecologically sustainable, socially and economically equitable and economically viable.

**SUSTAINABLE DEVELOPMENT**

In order to provide alternatives to the dominant system, it is necessary to articulate an alternative vision. Much of the debate surrounding sustainability started when the United Nations’ World Commission on Environment and Development (WCED) released its report *Our Common Future* in 1987. The WCED, also know as the Bruntland Commission, defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UNWCED, 1987, p.8). In short, sustainability rests in part on a principle of intergenerational equity. Since this original definition there has been a decade and a
half of debate and criticism on the sustainable development concept. What activities are accepted as sustainable vary. For example, while advocates of biotechnology argue that genetic engineering has resulted in healthier foods and a healthier environment, many scientists and consumer lobby groups are wary of the technology. Despite this, sustainability is generally described as an objective that attempts to integrate three main goals - ecological health, economic viability, and social and economic equity.

COMMUNITY FOOD SYSTEMS

Consistent with the larger debate surrounding sustainable development, the dialogue regarding Community Food Systems has had contributions by a diversity of people, organizations and perspectives - and means a variety of things to different people.

A Community Food System has been defined as "a collaborative effort to promote sustainable food production, processing, distribution and consumption in order to enhance the environmental, economic and social health of a particular place. Farmers, consumers and communities are partnering to create more locally-based, self-reliant food economies" (SAREP, 2002). Similar to sustainable development, this generally involves the three components of ecological sustainability, social and economic equity and economic viability.

Long-term maintenance, preservation or symbiosis with the ecosystem is of primary importance in sustainable development. Applied to food production, this principle can be interpreted as promoting a system of agricultural diversification that is grounded in values that reflect an awareness of ecological realities. In practice it is designed to work with natural processes to conserve resources, encourage self-regulation through diversity, and to minimize waste and environmental impact. The system focuses on challenges such as:

- Enhancing water quality in agriculture landscapes and adjacent areas.
- Conserving water resources in agriculture landscapes and adjacent areas.
- Conserving and enhancing the health and productivity of agricultural land and soil.
- Conserving biological diversity.
- Contributing to the stabilization of greenhouse gas emissions and minimizing the emissions of ozone-depleting substances (AAFC, 2001).

Social and economic equity includes consideration of social responsibilities such as the working and living conditions of labourers, the needs of rural communities, and consumer health and safety both
in the present and the future. A community food system also includes the concept of food security. A widely accepted definition of this concept, according to the United Nations Food and Agriculture Organization, is: “Food Security’ means that food is available at all times; that all persons have means of access to it; that it is nutritionally adequate in terms of quantity, quality and variety; and that it is acceptable within the given culture. Only when all these conditions are in place can a population be considered ‘food secure’” (Koc et al., 1999). Also included in an equitable food system is the understanding that food is a right rather than only a commodity.

Economic sustainability includes the viability of farming enterprises and the economic effects of a localized food system. An important component of economic sustainability in community food systems is the emphasis on creating a local food system, and fostering community development (Power, 1999. p.33). As D. Morris explains in Communities Building Authority Responsibilities and Capacity, “... small is the scale of efficient, dynamic, democratic, and environmentally benign societies” (Quoted in Power, 1999).

Implicit in all three components of a community food system is a focus on a particular set of values. When understood in terms of values, a community food system is rooted in “the thesis that the community, rather than the individual, the state, the nation, or any other system [like ‘the market’] is and should be at the centre of our analysis and our value system ... [it] can be understood to be conduction a straightforward prescriptive argument: human life will go better if communitarian, collective, and public values guide and construct our lives” (Frazer and Lacey, Cited in Power, 1999).

Planning for Community Food Systems

Planning for a Community Food System is a difficult task and is not adequately handled by conventional methods of analysis, such as neoclassical economics, due to the multi-dimensional aspects of farm management. According to Roderic Gill in Planning for Sustainable Agro-ecosystems: a Systems Approach, planning for sustainability in agricultural systems must be approached from a holistic or integrated perspective. This is because:

“The inherent complexity of real world agricultural systems implies an inductive, rather than deductive analytical approach ... [and because] ... inductive modeling procedure, system dynamics is able to represent the underlying feedback processes that define those ecological economic processes relevant to an understanding of sustainability. ... Farm management economists generally persist with traditional analytical tools such as cash flow budgeting and partial analysis to assess and plan management routines. ... All these characteristics are features of a non-systems or non-holistic framework. The problems generated from such an approach include an unrealistic appraisal of dynamic ecological-economic interactions. A likely outcome of ill-considered system dynamics might be resource degradation and other manifestations of non-sustainability” (Gill, N.D.)
The dimensions of any planning process extend to economic, ecological and socio-cultural interactions - and ecological, economic and socio-cultural concerns are of equal importance. As a result, one of the most central aspects of building a Community Food System is increased participation by all stakeholders who not only share insights but also work on multiple food system issues (Garrett & Feenstra, N.D.). Stakeholders include multiple formal and informal organizations, associations and individuals with a variety of backgrounds and expertise. "The participation of a broad cross-section of the community is essential for the project to be representative and contribute to the growth of a community food system" (Garrett & Feenstra, N.D.).

A Community Food System can be used as a vehicle to enhance stakeholder understanding of a holistic food system including ecological, social and local economic goals. For example, as a participatory process including all sectors of society, a Community Food System has the potential to involve a process of social learning\textsuperscript{9} bridging the gap between science, the community and decision making.

Further, by prioritizing stakeholder collaboration and participatory management, a Community Food System can act as an Adaptive Management System linking management strategies with societal values and scientific theory. As a result, a Community Food System can manage a broad range of goals, not just economic efficiency, and integrate public participation into environmental policy and decision making. For example, a community has the potential to incorporate the Precautionary Principle\textsuperscript{10} into its Community Food System. Collaboration between community members and environmental experts could result in priorities being placed on precautionary measures when dealing with use of technologies that have scientifically disputed ecological implications, such as genetic engineering.

\textsuperscript{9} "Social Learning Theory (SLT) is a category of learning theories which is grounded in the belief that human behavior is determined by a three-way relationship between cognitive factors, environmental influences, and behavior. In the words of its main architect, Albert Bandura, [']Social learning theory approaches the explanation of human behavior in terms of a continuous reciprocal interaction between cognitive, behavioral, and environmental determinants[']" (Quoted from Resource Center For Adolescent Pregnancy Prevention, No Date).

\textsuperscript{10} Although, the Precautionary Principle does not have an agreed upon definition, the principle generally suggests "that in order to protect the environment, a precautionary approach should be widely applied, meaning that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. [Further] [t]he precautionary principle permits a lower level of proof of harm to be used in policy-making whenever the consequences of waiting for higher levels of proof may be very costly and/or irreversible" (European Environment Agency, N.D.).
A Community Food System is also a long-term goal that involves the stakeholders themselves defining the vision. However, according to Feenstra and Garrett in *Growing a Community Food System*, some of the many food system issues that stakeholders work on in building a Community Food System are:

- supporting a stable base of family farms that use production practices that are less chemical and energy-intensive, and emphasize local inputs;
- generating marketing and processing practices that create more direct and beneficial links between farmers and consumers;
- developing food and agriculture-related businesses that create jobs, and re-circulate financial capital in the community;
- improving working and living conditions for farm labor; and
- creating food and agriculture policies that promote local food production, processing and consumption.

These initiatives are all examples of how a community food system has the potential to address many of the shortfalls and market failures related to neoclassical economics. For example: by supporting a stable base of family farms that use production practices that are less chemical and energy-intensive, and emphasize local inputs, a Community Food System helps to internalize the full ecological costs of producing agricultural products while supporting the local economy. A Community Food System also helps to reduce greenhouse gas emission by reducing the distance food has to travel. Such initiatives also tighten the link between producers and consumers and have the potential to foster an understanding regarding the interdependency between agricultural production, consumption of agricultural products and the ecosystem. They could further reduce opportunities to externalize ecological and social factors by creating a space to exchange knowledge about ecological concerns and production decisions, and local ecosystems. By developing food and agriculture-related businesses that create jobs, and re-circulate financial capital in the community, Community Food Systems contribute to the community's economic development and the economic viability of local farmers. Local initiatives to improve working and living conditions for farm labor have many positive socio-economic effects such as wealth redistribution. Finally, creating food and agriculture policies that promote local food production, processing and consumption helps provide security for local farmers and processors enabling them to plan for long term investments in their community and ecosystem.

The transition toward a sustainable community food system is the responsibility of all members in the system; including farmers, laborers, policymakers, researchers, government, retailers and...
consumers. All participants play a unique and important role in the components that make up the system. Furthermore, a wide diversity of strategies and approaches are necessary to create a more sustainable food system. Included in this are: specific local initiatives, more general efforts in policy, re-evaluating economic priorities and challenging conventional ideology.

Supply management may represent a unique opportunity for federal, provincial and local policies in Canada to foster this Community Food System Vision.

CHAPTER 2: SUSTAINABILITY AND AGRICULTURE IN CANADA AND BRITISH COLUMBIA

The Canadian government has started to address some of the problems associated with industrial agriculture. At the federal level the government has worked at promoting research, programming and related actions to address environmental concerns (AAFC, 2001). Historically, the government's focus has been on the conservation of the natural resource base upon which agriculture depends - particularly soil, water and genetic resources for crops and livestock. More recently, effort has gone into developing new ways of measuring and valuing environmental assets and services, and understanding the links between the environment and the economy. Two examples of federal initiatives are: 'The Environmental Indicators Project' and the 'Strategies for Environmentally Sustainable Agriculture and Agri-food Development in Canada' initiative (AAFC, 2001).

At the provincial level, in British Columbia there have been government-driven initiatives such as the Agricultural Land Reserve (ALR). The ALR is an area of land, zoned by the province, in which agriculture is recognized as the priority use (although the future of this policy is undetermined and insecure). Furthermore, there are several laws and regulations aimed at fostering sustainability. A few examples are: The Waste Management Act, Water Act, Fisheries Act, and Pesticide Control Act.

Even if laws and regulations were adequately enforced, compliance is unfortunately not sufficient to achieve many ecological goals. Consequently, "... voluntary actions, over and above those required to comply with laws and regulations, are an important part of achieving environmental objectives" (BCMAFF, N.D.). Examples of voluntary projects include: Agri-Food Regional Development Subsidiary Agreement (ARDSA); Agricultural Land Development Assistance (ALDA); National Soil Conservation Program; Green Plan for Agriculture; Fraser River Action Plan; and Interior Wetlands Program. Current programs include: Pacific Coast Joint Venture; Georgia Basin Ecosystem Initiative; Salmon Enhancement Fund; DFO's New Direction Program; Delta Farmland and Wildlife Trust; CARD
Different aspects of sustainability for the individual farmer, especially in the short-run, often emerge as competing interests. For example, ecological enhancement at times comes at the price of economic viability. More specifically, drainage maintenance requirements for farmers often conflict with fish habitat protections. The Fisheries Act places a much greater importance on fish and fish habitat protection than on agricultural requirements for drainage and irrigation, creating problems for many farmers (Qu'West Consulting Services, N.D.). Further, many farmers believe that: streamside setback regulations are unrealistically large; not grounded in truth; and not necessarily effective at achieving the desired habitat protection. Both of these situations create the concern that too much of the responsibility for ecological protection and/or enhancement falls on the agricultural community, rather than on "society" as a whole (Qu'West Consulting Services, N.D.).

In the late 1960's and the 1970's, in response to the growing number of global threats to local food security, many individuals, local communities and advocacy groups began a modern-day ecological movement to revitalize agriculture communities and farming practices. In the 1980's there was a dramatic increase in the number of organizations and promotional initiatives, increased levels of funding from public and private sources, and, in some cases, a greater degree of influence over public policy. Currently, there are hundreds of private and para-governmental organizations involved in promoting sustainable agriculture, encompassing a wide range of sizes, organizational capacities, and goals (MacRae, 1990).

However, despite these signs, growth driven and market orientated strategies endure in national and provincial policies, thereby exposing a bias toward industrial agriculture. Ottawa targets increasing productivity and new export markets, often through technological means such as biotechnology. Even government initiatives targeting sustainability such as the strategies outlined in, Agriculture in Harmony with Nature II, support the use of biotechnology and genetic engineering in an attempt to solve current ecological problems (AAFC, 2001). As global population and the demand for food steadily increases, Canada's agriculture industry continues to set ambitious new targets to increase its share of the global market. Further, "Canada remains committed to creating a free trade area throughout the hemisphere. Canadians and partner countries stand to benefit from the economic opportunities of what would be the world's largest free trade area" (DFAIT, 2003).
Consequently, trends in the agriculture sector continue to create a situation where a quest for profits often prevails over questions of public health, freedom of choice, local economies and ecological stability (Lappe and Bailey, 1999, p.vii). Concerns continue to emerge regarding how the benefits of additional production compare with the ecological, social and local economic costs. New trends such as an increase in the use of genetic engineering have emerged. At best this science is controversial, and at worst it has been considered the most dangerous new technology since nuclear power. Moreover, there continues to be a steady decline in the number of family farms; off-farm income has become a necessity for the majority; and the average age of farmers is rising as fewer young people enter the business (Qualman, 2001).

More change is necessary to address the growing number of ecological, social and economic problems in Canada’s agriculture sector. One unique policy that may have the potential to address some of the sustainability challenges facing the country is Canada’s supply-management system.

Supply management producers essentially control – through their provincial marketing boards and national marketing agency – the amount of product (supply) produced in Canada. Only five commodities are supply managed: eggs, chicken, milk, turkey, and broiler hatching eggs. Most other products use an orderly-marketing system, but do not control the amount of product produced (that is left up to the farmers to determine).

Although there exists a growing amount of literature and a lively debate surrounding the economic efficiency and welfare tradeoffs of supply management, there has been little research investigating the connection between sustainability and supply management. To examine this link I have chosen to study the dairy industry in the Fraser Valley, where the majority of BC milk production occurs, because it provides a focused example of a supply-managed commodity.

**HISTORY OF THE FRASER VALLEY DAIRY INDUSTRY AND SUPPLY MANAGEMENT**

The first dairy farms were established in British Columbia in the early 1800’s. In 1827, traders in search of suitable land for farming starting clearing the land on the southern shores of the Fraser River and founded Fort Langley (Watt, 2001. p.2). However, it was not until the discovery of gold in the Fraser River in 1858 that agriculture established roots in what is now called the Fraser Valley. In that same year it is estimated that almost 30,000 people had travelled to the Fraser Valley in search
of gold. The settlers were often both farmers and prospectors; and they produced butter, eggs, beef, pork and vegetables (Maclachlan, 1972. pp 7-9). As miners started to 'settle' the land, the character of the area was fundamentally changed. Before the arrival of the predominately European miners and settlers, the Fraser valley was home to several indigenous communities and it has been estimated that over 30,000 First Nation's people were living in the area (Fraser Valley Guide, 2002).

In 1891, there were approximately 6,500 farms in BC. Although most of these early farms were mixed, inventions such as the centrifugal cream separator allowed some farms to process a greater volume of milk and consequently specialize in dairy production (Watt, 1999. p. 18). And it was around this period that Chilliwack started to gain a reputation for its excellent dairy products – especially butter (Watt, 1999. p.18).

Some of the early problems included: heavy rainfall in winter, hot and dry summers, cold winters with snow, the river freezing in the winter, flooding in the spring, poorly drained soil with excess salty soggy ground, difficulties in clearing heavily forested areas, poor road making possibilities and poor communications if living away from the river (Maclachlan, 1972. p. 9-11).

Further, until 1910 farmers had difficulty transporting milk. Roads were generally poor or non-existent. The use of the Canadian Pacific Railway was often difficult (Watt, 1999. p.64). Dairy farmers produced dairy products for local areas. Economic viability for dairy producers depended not only on the quality of products and herds, but also on proximity to population (Watt, 1999. p. 20). The completion of the BC Electric Railway in 1910 had a tremendous impact on the dairy industry (Watt, 1999. p.64).

With the addition of this rail line, which connected Vancouver to Chilliwack, urban distributors capitalized on the increased milk supply that could now come from as far as Chilliwack in a few hours. As a result, prices for milk fell from two dollars per can to one dollar (Watt, 2000. p.64), and some processors were known to shut off a milk shipper on a day's notice, with the justification being – 'we don't want your milk' (Watt, 2000. p.64). Farmers started to have difficulties with the growing complexities and problems with the fluid milk market. These trends put the dairy farmer, with their extremely perishable commodity, at a disadvantage to the buyers and distributors (Maclachlan, 1972. p.24). Similar to the farmers in the Fraser Valley, agriculturalists across North America were faced with the problem of adapting to rapidly increasing industrialization. Farmers were caught in an economic squeeze as costs spiralled upward while prices for commodities fell. These factors drove many North American farmers into agrarian movements based in political action or cooperative marketing. The industry was facing what Vernon C. Fowke, a Canadian Agricultural Historian, termed
a "competitive inferiority". This occurs in a free enterprise system because the greatest profits go to the monopolistic elements that are most able to escape competition. Farmers, due to the atomistic nature of the industry at the turn of the nineteenth century, could never reduce competition sufficiently to deal on equal terms with the much smaller number of buyers for their produce. Furthermore, in Europe - the birthplace of most new settlers - where agriculture had been established for centuries, experience in tradition could be applied to farm problems. This was not the case in Canada. Short seasons, a rigorous climate, and unfamiliar soil types led to further problems that the individual farmer had neither the means nor the resources to solve (Maclachlan, 1972. p.24). "As a result, farmers throughout recent Canadian history have struggled against a set of circumstances unique to their industry. In response, farmers resorted to various collectivists schemes to alleviate the coercions of a growing monopoly capitalism and the other associated problems” (Lipset, 1968. p.17).

In the Fraser Valley, political parties, created from the cooperative movements, inspired the unrest in the valley necessary to gain farmer support for a plan to achieve market stabilisation through cooperative action (Maclachlan, 1972. p. 49). In general, in Canada the solution appeared to be control of the market in order to divert profits from the processor, or retailer, whether for milk, fruit or wheat (Maclachlan, 1972. p.47).

Aware of the success that the California fruit growers had achieved through a Rochdale system of cooperatives, many milk producers in North America resorted to this model to enable the farmer to survive in an increasingly competitive economy. However, the cooperative structure in the Fraser Valley was also molded by local requirements and shaped by local conditions.

Milk Cooperatives in British Columbia started to develop at the start of the Twentieth Century. These allowed producers to share the expenses and labour of milk production. They protected farmers from the distributor-controlled fluid milk market, providing better financial security. The majority of early farmers sold their milk very close to home because the transportation of fresh product over great distances was difficult (Watt, 2000. p.54). The cooperatives made marketing on a large-scale possible. They also allowed increasing demands on quality standards to be met (Watt, 2000. p.54). Further, the cooperatives enabled smaller farms the financial security they needed to remain competitive, through upgrading and expanding their herds and operations (Watt, 2000. p.54).

By 1910, Delta, Chilliwack, Victoria, Cowichan, Comox and Armstrong all had cooperative creameries. However, the economic recession of 1913 left the dairymen who were attempting to create one major cooperative in the Fraser Valley, with grave financial problems. A shortage of
capital, making credit hard to obtain, forced farmers to increase production because of decreased returns. This further decreased prices and returns (Maclachlan, 1972. p. 28).

The solution to many farmers appeared to be the control of the market by the producers in an attempt to divert profits from the middle-man. This would also stabilize the market by controlling quantity and preventing seasonal ‘gluts’ (Maclachlan, 1972. p.28). The Fraser Valley Milk Producers Association (FVMPA) was officially formed in 1913 but did not start to do business until 1917. It eventually took in the Chilliwack, Armstrong and Comox Creameries (Watt, 2000. p.54).

In the beginning there were 848 original members, which was about 60% of the producers in the valley (Watt, 2000. p.66, p. 78). The cooperative members were awarded the power to enhance their economic position through individual participation in decision-making and collective action (Watt, 2000. p.54). The organization had a “one man one vote” policy, and issues such as farm size, productivity, ability to contribute effectively, membership restrictions and membership expansion were constantly debated (Watt, 2000. p.68). The FVMPA also passed legislation to equalize returns to its members, which meant that farmers who produced milk year round would receive the same price per unit as farmers who shipped milk only a few months of the year – this also created debate (Watt, 2000. p.70). This structure allowed equal power in decision-making and permitted involvement of members in formulating and discussing policies. Ideas often originated with members and the association organized yearly elections of the directors. (Maclachlan, 1972. pp.65-6). Under the Cooperative Act, an association could handle the milk from the producers and work directly with the dealer without individual farmers having any contact with them (Watt, 2000. p.76). This was a means to collectively negotiate a higher price than could be done by individual producers. It also allowed some control over mitigating a surplus of milk. In 1923 the goals of the association were articulated: To maintain open membership and to handle as high a volume of milk as possible and to gain 100% control of the market (Watt, 2000. p.70).

After two years of operation, membership in the association rose to 90-95% of the producers in the valley (Maclachlan, 1972. p.56). The majority of the valley farmers had cooperated to control marketing in order to make the greatest possible gains for their investment. The success of the FVMPA increased membership and the size of the industry itself. It allowed part-time and beginning farmers an assured market.

However, as new buyers entered the lucrative fluid milk market and lured members away from the cooperative by offering higher prices, there was a tremendous increase in production and a large surplus, which in turn lowered the selling price (Maclachlan, 1972. p.56-7). Many of the larger
producers, who bore the expense of year-round production, defected from the cooperative and further depressed the price the association could offer its members even further.

The other groups, in and outside the valley, were known as 'the independent producers'. This group included the Twin City Cooperative Milk Producers’ Association, the Independent Milk Producers’ Cooperative Association, the Lower Mainland Milk Producers Association, the Richmond and Marpole Farmers’ Cooperative Association, the Milk Shippers’ Agency, the Jersey Breeders Cooperative Association and other independent producers. This group lobbied for their interests and to ensure adequate markets for their milk (Watt, 2000. p.56). As a result, an intense rivalry developed between the independents and the association members.

In the end, the success of the association in stabilizing the market became less of an advantage to its members than to independents (Maclachlan, 1972. p.61). However, the independents who left or refused to join the cooperative discovered that individuals are disadvantaged in a competitive market (Maclachlan, 1972. p.71).

Determined to control the quantity of milk produced (and the surplus), avoid price-cutting, and ensure equal prices received for milk by all producers, members of the FVMPA attempted to achieve this equalization of returns through legislation (Maclachlan, 1972. p.74). Over the years the principle of voluntary membership was modified. It was first replaced by a three-year contract, which was then replaced by a contract until retirement. This was seen by many as "compulsory or socialist" and was at odds with the "free enterprise" system and was a central issue in the debate to create a legislated system (Maclachlan, 1972. p.65).

It was a long struggle and "it was not until the milk industry had reached a chaotic state [in BC] with both producers and consumers in financial difficulties that controlled marketing became generally acceptable" (Maclachlan, 1972. p. 138). It was the dairy farmers of the Fraser Valley, together with the fruit producers, who were in the forefront of the provincial and national movements to create a legislated plan for ‘stabilization’, ‘orderly marketing’, or ‘market control’ (Dendy, 2002). This cooperative movement sparked a long and drawn out struggle to gain legislation which could provide equalization of access to the fluid market. Complicated by the effects of the depression and World War II, people worked to achieve this goal for almost 30 years.

In 1929, legislation was passed that brought milk products under the Produce Marketing Act. The Act had stringent conditions that required the FVMPA to work with independents to create stability in the market place. It was designed to treat the production, distribution, and sale of milk and cream
as a public utility – to be closely regulated and safeguarded in the interests of the public as a whole. However, non-compliance to the Act rendered it inoperative and legal challenges were upheld in the Supreme Court (Watt, 2000. p.150-151).

In 1954 J.V. Clyne, a Supreme Court judge, set out to oversee a Royal Commission to provide a comprehensive analysis of the dairy industry in BC - with particular reference to a large portion of the Fraser Valley. His recommendations included: (a) consolidating all legislation under one statute; (b) provisions for ensuring the quality of milk bought by consumers; (c) creation of the Milk Marketing Board to ensure unqualified producers do not operate and that the market is divided fairly among all qualified producers; and (d) price controls recognizing changes in producer costs, the purchasing power of the dollar and a supply and demand adjustment factor (Watt, 2000. p.154).

In the dairy industry, the long struggle by cooperative supporters to achieve market stabilization, orderly marketing and to gain equalization of the dairy market came to a close with the passage of the Milk Industry Act in 1956. This act adopted Clyne’s recommendations and gave BC the necessary authority to control the dairy markets. However, stabilization of the market was not the only outcome to follow the Royal Commission’s suggestions. As the provisions recommended by Clyne for ensuring the milk quality were implemented, smaller and marginal farms that could not afford the capital investment were forced to leave the industry. The licensing of farms, the mandatory use of refrigerated tanks and the use of inspectors to enforce quality standards led to a significant decrease in the number of dairy farms, and an increase to the average dairy farm herd size, in the Fraser Valley (Watt, 1999. p.169)

**DAIRY INDUSTRY IN THE FRASER VALLEY TODAY**

**Structure of The Industry**
As of July 2002 there were 694 dairy producers in the province; of these, 484 were in the Fraser Valley (BC Milk Producers, 2002). Despite the fact that the number of dairy farms in the province has fallen from 5,285 in 1971 to 694 in 2002, the number of cows in the province has remained relatively constant (MAFF, 2002). Production, on the other hand, has increased consistently from just over 350 million litres in 1965 to just under 600 million litres in 2000. These production increases have come almost completely as a result of increased efficiencies (BC Milk Producers, 2002). Today the average number of milk cows on the dairy farms in the province is just over 90 (BC Milk Producers, 2002).
The dairy industry is the single most important agriculture sector in the province and now accounts for over $300 million per year in farm gate sales (BC Milk Producers, 2002). Although 75% of the production is located in the Fraser Valley, dairying is also one of the most regionally diverse sectors of the agriculture economy (Island Internet, 2002). Direct employment of the industry including producers, processing plants, wholesalers, retail and supply trades equals about 11,000 people (BC Milk Producers, 2002).

**Current Regulations**
The current regulatory framework was developed largely in the mid-1960's. As in the past, the policy for market regulations is based on the perception that farm incomes are low and unstable relative to non-farm incomes. Consequently, government intervention was required to 'level the playing field' between producers and processors and, more recently, retailers. This was required because processors and retailers are more concentrated and economically powerful than any one of the large number of small producers. Although, in the past, government intervention involved direct subsidies to dairy producers, as of 2002 direct subsidies are no longer administered.

With Supply Management producers essentially control – through their provincial marketing Boards and Natural Marketing Agency – the amount of product (supply) produced in Canada. Specifically, the British Columbia Milk Marketing Board (BCMMB) and the Canadian Dairy Commission (CDC) have the power collectively to: restrict imports into the country; control domestic supply through limitations on what farmers and provinces can produce or market; and as a result, set domestic price for milk (Barichello, 1999, p.4).

**Price**
In British Columbia, farm gate milk prices are determined using a 'multiple component pricing' formula. The producer is paid for three main components in the milk: butterfat, protein and other solids. Each producer has a single quota for a specific number of kilograms of butterfat daily, and receives a blended price that reflects the shared revenues from the fluid and industrial sales in the region. The British Columbia Producer Milk Pool is operated monthly by the BCMMB so that all producers can market the same proportion of their milk in each class. However, because the marketed quantity of milk is kept from exceeding the mandated quota levels, the binding policy instrument in Supply Management is farm quota – this supply restriction effectively sets prices at levels that are no lower than the set floor prices (Barichello, 1999, p.47).

**Domestic and Import Restrictions**
To implement supply restrictions, the marketing boards use two different quota type: (a) a farm level quota and (b) an import quota. The farm level quota is a specified number of units of
production that can be sold each year on the domestic market. Each farmer’s quota allotment limits how much farm output that can be marketed each year. There is no time period attached to the individual farm quota amount – they can last indefinitely (Barichello, 2002. p.4).

The CDC estimates the quantity demanded for all milk products. However, it is the Federal/Provincial Canadian Milk Supply Management Committee (CMSMC) that makes the final decision on total milk supply needed. The CMSMC also decides on the allocation of this total to each province, while the provincial boards determine the allocation to individual farmers.

The import quota provides a quantitative limit on import access across the different final consumer products within the dairy industry. These quotas evolved in the early 1970’s. As a result of the Uruguay Round Agreement on Agriculture (URAA) - that emerged after eight years of talks at the World Trade Organization (WTO) – these quotas became part of the agriculture trade regulation infrastructure and are now referred to as ‘tariff rate quotas’ (TRQ). They differ from farm quotas in that they are allotted annually. The federal Department of Foreign Affairs and International Trade (DFAIT) administer them. These quotas set a relatively low tariff on imports up to the minimum access level. The guidelines established a minimum access level at three percent of domestic consumption initially, and expanded to five percent at the end of the six-year implementation period (1995-2000). Additional imports – over quota tariffs - face much higher protection. These tariffs are extremely large and result in imports above the TRQ level that are uneconomic (Barichello, 2002. p.4). TRQ are managed by DFAIT in accordance with Canada’s commitments in URAA. There is no provincial or local government involvement with these quotas.

The benefits of supply management according to the Dairy Farmers of Canada are as follows:

Supply management and collective marketing benefit producers by:

- Allowing them to obtain a better share of the consumer dollar than farmers in some other countries.
- Giving them collective rights that counterbalance the stronger market power of other bigger agri-food industry players.
- Maintaining price stability, which together with a fair share of the consumer dollar, provides producers with adequate, stable incomes, fair returns on labour and investment, and the opportunity to invest in their business with confidence.

Supply management benefits processors by:
o Providing reliable access to adequate supplies of raw milk, thereby enabling production planning to satisfy consistent demand for Canadian dairy products.

o Providing them with stable and reasonable prices that contribute to their profitability without raising product prices for their buyers.

o Establishing a fair marketplace with milk available to all processors at comparable prices and on similar terms.

Supply management benefits consumers by:

o Providing a steady supply of high quality dairy products that compare favourably with retail prices in other countries with major dairy industries.

o Promoting retail price stability for dairy products.

o Allowing consumers to choose from a wide variety of domestic and imported dairy products (Dairy Farmers of Canada, 2002).

In summary, the objectives of supply management are to:

- Improve and stabilize producer incomes;
- Improve stability and predictability of commodity prices by ‘dampening’ volatile price swings;
- Ensure stable, predictable and adequate supplies; and
- Promote the economic viability of small closely held (family) farm businesses (MAFF, 2002).

The provincial government in the recent report *Review of Regulated Marketing in British Columbia, Part One, Historical Overview* concluded that the regulated market system has met its stated objectives for supply managed commodities by:

- Improving and stabilizing producer income;
- Improving the stability and predictability of commodity prices by dampening volatile price swings;
- Ensuring, stable predictable and adequate supplies;
- And fostering the viability of small closely held (family) farm business.

**THE ECONOMIC DEBATE**

Despite the claims that supply management: improves and stabilizes producer income; improves the stability and predictability of commodity prices; ensures adequate supplies; and fosters the viability of smaller sized family farms - many critics of the system declare that supply managed industries:
are inefficient and encourage a misallocation of resources; hamper new product development; restrict new operations from entering the industry; and stifle production through over priced products (Schmitz and Schmitz, 1994. p.125). Further, the opponents of supply management argue, especially academic economists, that rent seeking - which accompanies supply management with its high quota values - has led to a decrease in aggregate welfare through inefficiency of resource use (Schmitz and Schmitz, 1994. p.126). In general, the discussion revolves around the net welfare effects of supply management and the competitiveness of Canadian supply managed commodities relative to world, or US industries.

**Supply Management – A Net Loss to Society?**
The basis of these pro free-trade arguments is a neo-classical economic theory known as 'comparative advantage'. This economic theory explains that it is beneficial for all countries to engage in trade because it is more economically efficient. For example, if Country A invests in specializing in producing the good which it is comparatively more superior at making and Country B specializes in what it does best and the countries trade, then resource allocation and efficiency are maximized. As a result, GDP is enhanced; and according to the World Trade Organization data, there exists a statistical link between freer trade and economic growth (World Trade Organization, 2003).

As a result of the growing number of criticisms regarding the supply management system, several studies have been done estimating the economic effects of supply management. To start, Owne Lippert in *The Perfect Food in the Perfect Mess: The Cost of Milk in Canada*, argues in favour of full trade liberalization in dairy products, suggesting that supply management raises the price of milk beyond free market prices (Lippert, 2001. p.4). His economic welfare analysis attempts to explain and quantify the consumer loss resulting from imperfect competition, which is caused by supply management. He states, that supply management - and the consequent higher price – causes consumers to under-consume dairy products. The elimination of supply management would lead to improved or more efficient market performance. The analysis states that:

"The dead weight loss generates a net loss for the consumer larger than the net gain of farmers. The reason is that the marginal benefit to the consumer of consuming one more unit is greater than the marginal cost of producing one more unit. Stated another way, consumers lose more than farmers gain from policy intervention" (Lippert, 2001. p.4).

Lippert estimates the dead weight loss at $200 million with the estimated consumer transfer to producers ranging from $839 million to $987 million (Lippert, 2001. p.57). Lippert also explains that if a consensus exists among Canada’s leading dairy economists, regarding the effects of free trade or partial free trade, it is that Canada’s consumers will benefit and milk producers will also benefit after a period of adjustment (Lippert, 2001. p.69). Further, the Organization for Economic
Cooperation (OECD) estimates that in 2001 consumers and taxpayers subsidize dairy farmers - or their Producer Subsidy Equivalent (PSE) is - approximately fifty-eight cents of every dollar\textsuperscript{11} (Doyon, Paillat & Gouin, 2001. p.14). This view regarding the inefficiencies of current dairy policy, is similar to the one held by the Cairns Group – a powerful lobby group – of non-subsidizing agricultural exporting countries who came together in 1986 with the sole purpose of placing national agriculture policies under the GATT (now WTO). The Cairns group is focused on trade liberalization and their agenda for agriculture negotiations during the current round of trade talks at the WTO includes goals such as expanding Tariff Rate Quotas beyond five percent (Anderson, 1999).

**Supply Management – A Net Gain to Society?**
According to Meike, Sarkar and Le Roy (1998) the economic implications of supply management are well known. Citing several other studies by academic economists - including: Barichello 1981; Forbes, Hughes and Warley 1982; Barichello 1986; Barichello and Cunningham-Dunlop 1987; Stonehouse 1987; Shmitz and Schmitz 1994 – they conclude that the welfare gains to producers outweigh the welfare loss to consumers (p.151). In other words, the net benefit to society from supply management is positive.

**Competitiveness of the Dairy Industry: Potential Trade Flows Without Supply Management**
The economic debate surrounding the elimination of supply management has also focused on both the competitiveness of Canadian dairy producers, and on the size and direction of trade flows in milk and dairy products without supply management. For example, Meike, Sarkar, and Le Roy (1998) - in a static, non-spatial, synthetic, partial equilibrium model - explored the issue of free trade in dairy products between Canada and the US. They concluded that “under any reasonable set of parameter estimates, net trade between Canada and the United States would be small, or zero” (p.1). Their results also show that “Free trade would be accompanied by large welfare losses for the current owners of Canadian milk production quota” (p.1).

In a non spatial multiregional model of the world dairy industry, Lariviere and Meilke analyze a partial liberalization of dairy trade. They conclude that:

“More market-orientated though still protected regions such as the U.S. generally improve their competitive position in the world as border measures are removed. By contrast, the dairy industry sectors in regulated milk production markets such as Canada and the EU-15 are projected to be better off when the reform package does not compromise current policy settings, while giving some additional market access for surplus dairy production” (Lariviere and Meilke, 1999. p.59).

\textsuperscript{11} The percentage PSE represents the total PSE / Gross Receipts (Nelson, 1999).
This report also concludes that (assuming an increase in the export of milk is desired) complete trade liberalization offers the highest growth potential for milk producers in Canada and the EU-15. However, the loss in economic rent, by existing producers, capitalized into quota values is significant and would be approximately C$1.8 billion. Furthermore, the study suggests that trade liberalization is the most beneficial reform for consumers (measured in terms of quantity purchased per dollar, not quality) (Lariviere and Meilke, 1999. p.74).

Richard Barichello in *The Canadian Dairy Industry: Prospects for Future Trade* also claims that the data suggest that a drastic reduction of protection in the Canadian dairy industry in the next WTO round may not result in a significant increase in US exports to Canada (Barichello, 1999). Although, the fact that the US dairy industry is eager to obtain greater access to the Canadian market for US exports implies that they believe Canada is less competitive than the US (Barichello, 1999. p.51). For example, the US Dairy Council and the National Milk Producers Federation suggest that the US has a potential US$ 1 billion dollar market in Canada in the absence of trade barriers (Le Roy, 2001). Barichello asserts that the answer is not so clear. He states, “Canada may be competitive with the US, at least at our current exchange rate” (Barichello, 1999. p.57).

According to Agriculture and Agri-Food Canada (AAFC), “subject to the influence of the exchange rate fluctuations, Canadian production costs are generally above those in the US, in both raw milk production and dairy products processing” (AAFC, 1996. p.33). Following from this, one can assume that in the event of increased trade liberalization the Canadian dairy industry would decline due to their less competitive nature, and imports from the US would increase to some degree. AAFC’s conclusion is based on a comparison of seven independent studies ranging from 1986 to 1995. This implies that Dairy producers in Canada are generally less competitive than the US except with a weak Canadian dollar –which is currently the case.

Some economists explain that our current situation is the most advantageous time to deregulate supply management, because we can best cope with the adjustment period with a weak Canadian dollar.

**A Critique of Net Welfare and Competitiveness Analyses**

Other economists criticize economic analyses that focus on a farm gate level as having a number of short-comings. For example, Andrew Schmitz in *Supply Management in Canadian Agriculture: An Assessment of the Economic Effects* highlights that many economic analyses of supply management are based on an incorrect assumption implicit in Adam Smith’s laissez-faire doctrine: e.g. the existence of competitive markets in all sectors, except the one being studied, and externalities being
absent (Schmitz, 1983. p.141). More recent reports by Schmitz explain that most analyses of supply management are constructed without including all links in the food chain. Specifically, analyses have focused at the farm level and the processing and retail sectors have often been left out (Schmitz and Schmitz, 1994. P.128). Following from this, Doyon et al. in Critical Analysis of the Producer Subsidy Equivalent in the Dairy Sector concluded that the PSE as calculated by the OECD is significantly overvalued due to several incorrect assumptions in the model.

As a result, some see supply management as essential for producers in markets dominated by a shrinking number of retailers and processors.

"In most countries, power in agriculture production has shifted from farmers to the agriculture input industry, from food processors to distributors and food retailers ... within these shifts the general rule in post-fordist economics is that power resides with the sector that mediated between the producer and the consumer: It's a traders world" (Lang, 2001. p.217).

This view advocates that the effects of dairy trade liberalization would be predominately negative. When a few firms dominate an industry they gain a substantial amount of

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**IS SUPPLY MANAGEMENT UNDER SERIOUS THREAT?**

Advocates of trade liberalization attack the supply management system at the international level in trade negotiations, such as the World Trade Organization (WTO). Currently, however, dairy and supply managed commodities enjoy a significant degree of protection. There remains a risk that the current Doha Round of trade negotiations under the WTO will result in a further reduction in protection for the Canadian dairy industry and lower or no quota values. Specifically, parties involved in this process, such as the US, the Cairns Group and most developing countries want to see an increase in market access for supply managed agricultural products. This means, most likely, an increase to Tariff Rate Quotas (the larger the increase the greater the access to Canada’s domestic market) or a reduction in tariffs (Martin, Grier, & Mayer, 2002. p.41). As a result supply management could destruct from tariffication under the WTO. The outcome of tariffication could potentially erode the power of supply management if the final tariffs negotiated turn out to be relatively low, in the long run.

According to Martin et al, the threat to supply management is relatively low for the next five to ten years. However, the major threat to that statement is that “While we expect that the negotiations will result in reduced protection, it is not clear by how much” (Martin et al, 2002. p.42). In the Doha round and the rounds to follow, it has yet to be made clear whether this is just the beginning in market access.

A second potential for the erosion of supply management follows from the recent challenges under the WTO relating to export subsidies. In June, 2002 the WTO released its report stating that Canada acted inconsistently with its obligations on export subsidy reduction commitments.

In 1999, the WTO found that Canada’s special export classes correspond to the definition of an export subsidy. The US and New Zealand argue that Canada dairy exports receive an export subsidy because government mandated supply management agencies determine export volumes, and government involvement constitutes a subsidy. As a result Canada changed its system so that exports occur outside of the supply management system. However, the US and New Zealand persisted, and in June 2002, the WTO released a report stating that Canada acted inconsistently with its obligations on export subsidy reduction commitments. The WTO panel said that by preventing individuals from selling milk in the domestic market without quota, Canada was forcing them to export. Canada is now appealing this ruling (DFC 1). 2002. p.22).

It is again unclear how far attacks on the supply management will go. With each attack it becomes more difficult for the supporters of the system to protect the system. However, according to some, it is "difficult but not impossible" (Rude, 2001).
power, and with that control they also possess the potential to manipulate the outcome of that industry disproportionately in their favour.

**Summary of Economic Debate**

In the North American food system, there has been a steady trend towards an increased amount of economic power in a fewer number of players - especially in the processing and retail sectors. This violates the pro-free trade assumption of perfect competition. At the core of this debate is that supply management supporters do not believe that "free" markets are "perfectly competitive", which is a fundamental assumption in the pro free trade position (Phillips, 1996). In summary, the free market economists are generally concerned with long run perfectly competitive equilibrium; implicit in this analysis is the assumption that adjustment costs are zero, and are ignored. Distributional effects are also ignored (Phillips, 1996).

While there are a myriad of avenues that this debate could follow, for the purpose of presenting clarity to this debate the following questions are asked:

- Is supply management raising consumer prices; stifling dairy product consumption; restricting new product development; hampering growth; fostering a misallocation of resources, and stopping new and small dairy operations from entering the industry?
- Or, does supply management act in the public interest by stabilizing producer incomes, improving stability and predictability of farm gate prices, giving collective rights to farmers to counterbalance the stronger market power of processors and to a greater extent retailers, and providing consumers with an affordable high quality product?

**TRADE AND THE ENVIRONMENT**

To effectively analyze and understand whether supply management is a useful policy that maximizes society's utility, the framework needs to address economic well-being and equity under the confines of ecological sustainability. Specifically, the dairy industry from a Community Food System perspective is also experiencing a growing number of debates surrounding the ecological, and socio-economic sustainability of the industry. The following list outlines several of the issues facing the dairy industry in the Fraser Valley from a Community Food System perspective:

- The potential removal of the ban on genetically modified recombinant bovine growth hormone (BST) in Canada, and its illegal use.
- Farm viability and loss of the family dairy farm.
- Rural depopulation.
• The use of antibiotics.
• Access to water.
• Water contamination through milk house wastes, animal manures, and herbicides used on field crops.
• Animal Welfare issues.
• Increase in corporate control of farms.
• The use of genetically modified feed.
• The potential of cloning.
• Potential trampling of riparian areas by cattle, loss of wildlife habitat, reduced biodiversity and greenhouse gas emissions.

Although there has not been a substantial amount of research connecting supply management and ecological concerns, economic analyses suggest that agriculture deregulation in general would improve global ecological health. The dominant opinion among neoclassical economists supports the hypothesis that agriculture reform, focusing on reducing overall support levels and decoupling the remaining support from production decisions, will result in reduced environmental externalities and more efficient resource allocation (Bradshaw & Smit, 1999). For example, the OECD contends, as summarized by Bradshaw and Smit (1999) that “reductions in price support and input subsidies lower demand for agrochemical and mechanical inputs, as well as for irrigation water, and promote a de-intensification of both crop and livestock production, thereby leading to, for example, reduced clearing of marginal land, grazing pressures and manure surpluses” (p.1). Further, Anderson and Strutt (1996) in Agriculture, Trade and the Environment: Discovering and Measuring Critical Linkages, explain that in general, increasing trade raises incomes and as a result, ecological health is most likely improved. They demonstrate that a correlation exists between countries with a high agriculture Producer Subsidy Equivalent (PSE) and elevated use of fertilizers and pesticide per hectare. They conclude that with global trade liberalization in meat and milk products, production would shift from ‘rich’ densely populated countries to ‘poor’ low-density countries. This would positively affect sustainability because production would shift from grain feed intensive agriculture to pasture based systems (Anderson & Strutt, 1996). “The greater use of less intensive methods would reduce not only air, soil and water contamination associated with disposal of animal effluent but also chemical additives in the food produced” (Anderson & Strutt, 1996. p.160). Furthermore, they also suggest that the greater use of crop/leguminous pasture rotation methods will reduce the need for chemical fertilizer and lower water pollution from nitrates (Anderson & Strutt, 1996). Lastly, they conclude that with agriculture deregulation ‘rich’ countries - that have price supports but do not have land set aside policies - would experience lower land values, which would in turn reduce the
use of land substitutes such as chemicals, irrigation water and feed concentration (Anderson & Strutt, 1996).

However, some studies question this logic and suggest that removal of state intervention in agriculture production will increase "the pressure and/or desire to adopt an expansionary strategy, with a continued reliance upon specialized production, ... given the likely effect of current regulatory changes on agricultural commodity pricing patterns" (Bradshaw and Smit, 1999. p.2). As a result, this may increase, rather than decrease, exploitation of the biophysical environment (Bradshaw and Smit, 1999).

Moreover, despite the fact that numerous studies conducted in the late 1980's and early 1990's isolated a number of agriculture policies in Canada that led to a variety of harmful ecological impacts such as income support and farm subsidies, the studies also conclude that the ecological impacts of quotas and supply management have been relatively benign (Pierce, 1993). "If anything these programs have slowed the process of agriculture industrialization relative to the United States and in the process, have assisted in preserving small and medium scale producers" (Pierce, 1993. p.387).

Understanding the discussion regarding trade and the environment in the context of Fraser Valley dairy production is difficult. Since the disengagement of the state in agriculture can take many forms, the outcomes of the different agriculture reform policies are likely to vary between policies and also between agriculture sectors. As a result, generalized analyses on trade and the environment may not always apply to the unique circumstances that govern the dairy industry in the Fraser Valley. Furthermore, policy changes within agricultural sectors are likely to produce a diversity of farm-level adjustments, rather than a single response by all farmers in all regions (Bradshaw & Smit, 1999). Consequently, it is valuable to analyze the potential outcome following the deregulation of supply management in the dairy industry in the Fraser Valley in an attempt to broaden our understanding of the connection between trade and sustainability, at the local level.

**PUTTING IT ALL TOGETHER**

Well functioning markets have the potential to be an effective mechanism for allocating resources among users and over time when certain fundamental conditions are met. However, recent critiques on the neoclassical system explain that economic integration of the globe is causing a number of ecologically destructive trends. Further, other criticisms on globalization highlight that even well
functioning markets do not address distributional concerns and do not necessarily lead to an increase in society's well-being. Specific to food production, studies have shown that the industrial mode of agriculture – which is both a product of, and dependent on, this economic integration of the planet – is neither ecologically nor socio-economically sustainable. Even discussion from within the mainstream discipline of economics explains that markets fail because retail prices generated by such markets do not reflect the 'true' social and ecological costs and benefits of resource use. There are many types of market failures, a few examples are: ill defined or non-existent property rights; market imperfections, specifically lack of competition in the form of local monopolies, oligopolies; and public goods that should not be provided through the market because excluding free riders will reduce social welfare (Panayotou, 1993. p.34).

Supply management emerged in the mid 1950's as a mechanism to alleviate certain market failures in the agriculture industry. Specifically, the policy aimed to compensate an imbalance in market power in certain agriculture industries to stabilize the market and farm income. Over half a century later, supply management has grown increasingly controversial with many academic economists presenting evidence that supply management is raising consumer prices, reducing consumption, restricting new product development, slowing growth, encouraging a misallocation of resources and restricting new small dairy operations from entering the industry. Others defend the system, highlighting flaws in the critics' analyses, which advocate that the system acts in the public interest and counterbalances strong market power. To advance this debate, I will analyze the effects of supply management on the British Columbian dairy industry from a sustainable development or Community Food System perspective. To broaden the depth of the quantitatively focused economic debate, I will examine the local and qualitative context related to the deregulation of the BC dairy industry and sustainability.

While literature exists relating trade liberalization to sustainability, further research and discussion should be allocated toward uncovering connections between socio-economic and ecological sustainability and supply management. Specifically, the debate needs to reach beyond quantitative analyses in order to uncover the qualitative facets related to sustainability and supply management.

If Canada and British Columbia want to pursue a variety of objectives such as: social, economic, intergenerational equity and ecological integrity, it is valuable to analyze our current policies - such as supply management - within a framework that has the capacity to encompass a broad range of goals. Sustainable development (or in the context of agriculture, Community Food Systems) presents one such form of analysis that can reach beyond economic efficiency and focus on qualitative development. Consequently, I think it would be timely and valuable to investigate whether the
supply management system: serves as an effective public policy tool in addressing many of these current sustainability challenges; or acts as an institutional barrier in the transition of the dairy industry towards sustainability. (For Research Question see page 3)
CHAPTER 3: METHODS

This thesis explores the connections between ecological and socio-economic sustainability and supply management. I undertook an exploratory evaluation of what socio-economic and/or ecological costs and benefits may result in the absence of supply management. This multi-disciplinary approach was designed in an attempt to identify a broad range of potential positive and negative trends that may result from deregulation. Investigating supply management and sustainability holistically has the benefit of helping to develop understanding relating to the nature of the relationship between supply management and sustainability. It also has the potential to identify important qualitative linkages that much of the current discourse has neglected.

However, exploratory research has the disadvantage of not developing conclusive evidence. Despite this, exploratory evaluations are an important first step in clarifying, and identifying, the issues. Consequently, the primary focus of this thesis is to identify potential positive or negative trends that may result from deregulation, provoking further research and discussion on the specifics.

To answer basic research questions I developed a method based on Grounded Theory. Introduced in 1967, Grounded Theory is a qualitative method for analyzing large amounts of text. “The procedures of Grounded Theory are designed to develop a well-integrated set of concepts that provide a thorough theoretical explanation of social phenomena under study” (Corbin & Strauss, 1990, p.5). Grounded Theory allows the researcher inductively to derive theories that help answer research questions. That is, research results are discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to the issue under study (Pandit, 1996). Unlike deductive methods, this does not start with a hypothesis. Rather, it begins with a well-defined research problem that is inadequately explained in theory. Because Grounded Theory is emergent (discovered in the data), the research methods can be emergent as well and should change to fit the individuality of each study.

A Grounded Theory study works through the following overlapping phases (See Table 1: Grounded Theory). I designed my process following the steps suggested by Pandit, 1996.
<table>
<thead>
<tr>
<th>Step Number</th>
<th>Pandit's Suggested Steps</th>
<th>My Process</th>
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<tbody>
<tr>
<td><strong>RESEARCH DESIGN PHASE</strong></td>
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<tr>
<td><strong>Step 1</strong></td>
<td>Review of literature</td>
<td>I reviewed literature from a wide variety of academic disciplines including: dairy farming, supply management, political science, economics, ecological economics, ethics, sociology, ecology and agricultural sciences.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Preliminary definition of research problem or area</td>
<td>I reviewed literature from a wide variety of academic disciplines including: dairy farming, supply management, political science, economics, ecological economics, ethics, sociology, ecology and agricultural sciences.</td>
</tr>
<tr>
<td><strong>DATA COLLECTION PHASE</strong></td>
<td></td>
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<tr>
<td><strong>Step 3</strong></td>
<td>Develop rigorous data collection protocol</td>
<td>I selected my interviewees using a &quot;snowball sampling&quot; technique, in which persons being interviewed were asked for referrals to others they know within the community. I started this approach by identifying farmers, food policy academics, and government officials willing to be interviewed through initial contacts I had at FarmFolk CityFolk, and colleagues studying similar issues. This 'rolled the snowball' (Statpac, 2002).</td>
</tr>
</tbody>
</table>

(See Appendix A for Interview Questions)
Thirteen in-depth formal interviews were carried out, and recorded, with a variety of stakeholders in the food system including: nine dairy farmers, two policy experts/academics, and two government officials. To explore the ecological and/or socio-economic benefits, and/or costs of supply management, I designed the interviews to solicit opinions regarding the positive and/or negative effects that would occur with a slow deregulation of supply management.

In addition, eight informal interviews were conducted including: four policy experts/academics, three government officials and one farmer. These interviews supplemented the literature review and provided further links with possible interviewees. Although these interviews were intended to be in-depth interviews, these individuals did not feel qualified to discuss the identified topic formally and choose to informally discuss related issues. Casual notes were taken.

My interviews were conducted in the Fraser Valley, B.C. during October and November, 2002. Each interview lasted from one to two hours. I used a handheld tape recorder to record the interviews and transcribed them into a fifty-five page single spaced document at a later date.

Flexible and opportunistic data collection methods allow investigators to take advantage of emergent themes and unique case features. This may result in an overlap of data collection and analysis.
**TABLE 1 CONT**

<table>
<thead>
<tr>
<th>Step Number</th>
<th>Pandit’s Suggested Steps</th>
<th>My Process</th>
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<tr>
<td><strong>DATA ANALYSIS PHASE</strong></td>
<td></td>
<td>I identified six key <strong>categories</strong> relating to dairying, sustainability and the deregulation of supply management. Some categories were predetermined and some emerged as a result of the interviews. In this, the text from the interviews themselves informed the development and the content of the categories rather than having the data forced into pre-determined categories. The categories are: (a) Thirteen Interviewees’ Perceptions Regarding: Dairy Farming Cost of Production Advantages in the US Compared with BC; (b) Thirteen Interviewees’ Perceptions Regarding: What Milk Producing Regions Would BC Dairy Farmers Compete With in the Absence of Supply Management; (c) Thirteen Interviewees’ Perceived Impacts in the Dairy Industry From Deregulating Supply Management in BC’s Dairy Industry; (d) Thirteen Interviewees’ Perceptions Regarding: Dairy Farming and the Effects of a Reduced Profit margin That Would Accompany the Elimination of Supply Management; (e) Thirteen Interviewees’ Perceived Impacts on Socio-Economic Equity From Deregulating Supply Management in BC’s Dairy Industry; (f) Thirteen Interviewees’ Perceived Impacts on Ecological Health From Deregulating Supply Management in BC’s Dairy Industry. I also identified two <strong>sub-categories</strong> under the Ecology category: (a) Thirteen Interviewees’ Perceived Impacts on Animal Welfare From Deregulating Supply Management in BC’s Dairy Industry; and (b) Thirteen Interviewees’ Perceived Impacts on Food Quality From Deregulating Supply Management in BC’s Dairy Industry. Under each category and sub-category I identified and organized a range of one to eight <strong>concepts</strong>. Each concept represents a perceived effect, or a factor related to a perceived effect, that would occur as a result of the de-regulation of supply management. The effects are related to ecological health, socio-economic equity and changes in the structure of the industry. The <strong>propositions</strong> that emerged were generally summarized as a (a) positive, (b) negative or (c) neutral relationship between the category and the concept.</td>
</tr>
</tbody>
</table>

Develop categories, concepts, and propositions. This is an iterative process.

A **category** is a theme or variable that makes sense of what your interviewee has said. They are higher in level and more abstract than the concepts they represent. (For further example see Table 2)

**Concepts** are the basic unit of analysis. They are the incidents, events or activities that are taken as potential indicators of phenomenon. (For further example see Table 2)

**Propositions** describe a generalized relationship between a category and its concepts. (For further example see Table 2)

(See Appendix: C for a complete list and summary of concepts organized under categories) (See Appendix: B for a complete list of interviewee quotes organized under categories)
<table>
<thead>
<tr>
<th><strong>Step Number</strong></th>
<th><strong>Pandit's Suggested Steps</strong></th>
<th><strong>My Process</strong></th>
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<tr>
<td><strong>Step 6</strong></td>
<td>Display findings.</td>
<td>The results of the in-depth interviews were displayed in Bar Graphs. Since the interviews were open-ended, the interviewees may have discussed the various categories at any point or several times in the interview. Each concept was cataloged; so one interviewee may have expressed any number of concepts. Consequently, the graphs display most concepts expressed under each category by each interviewee – each new concept creates a new column in the bar graphs. If an interviewee expressed the same concept twice, it was not double counted. Therefore, the maximum number of times a concept could be catalogued was thirteen: the number of the interviewees. (See Table 2: Example, for an example of how the graphs were developed)</td>
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<tr>
<td></td>
<td></td>
<td>The transcribed quotes (concepts) are organized under each category heading in Appendix A. The full, transcribed interviews were not included because of confidentiality concerns. Each interview was assigned a number one to thirteen and the appropriate number was placed in front of the suitable quote in Appendix A.</td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>Go back to step 2 and collect more data if necessary.</td>
<td>Given the logistical time limitations surrounding my study I stopped at one iteration of this process. Further research involving the processing and distribution sectors of the dairy industry would strengthen the hypothesis I have developed.</td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td>Research closure.</td>
<td>I ended the in-depth interview process when marginal improvements were small. For example, in the last three interviews very little new information was gained. Although a greater number of interviewees would have improved the statistical significance of this study, I felt given the qualitative scope and time limitations surrounding the study the amount of information gained was adequate.</td>
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</table>
The following table is adapted from Pandit, 1996, *Table 1: The Process of Building Grounded Theory.*

<table>
<thead>
<tr>
<th>Step Number</th>
<th>Pandit's Suggested Steps</th>
<th>My Process</th>
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<tbody>
<tr>
<td><strong>Step 9</strong></td>
<td>Literature review continues.</td>
<td>I again revisited the literature to &quot;locate&quot; my findings in relation to others' understanding and interpretations.</td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td>Write up results and conclusions.</td>
<td>I gathered all the data and finished writing up my thesis</td>
</tr>
</tbody>
</table>

**WRITING PHASE**
To demonstrate how the six categories, concepts and propositions were developed out of the in-depth interviews Table 2 is an example of the development of the graph for sub-category a) How Thirteen Interviewees Perceive the Impact of Deregulating Supply Management on Animal Welfare in BC's Dairy Industry.

### TABLE 2: EXAMPLE: THE DEVELOPMENT OF THE GRAPHS


<table>
<thead>
<tr>
<th>CONCEPT</th>
<th>PROPOSITION &amp; FREQUENCY</th>
<th>QUOTE FROM INTERVIEWEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1). Improved Technology Enhances Animal Welfare</td>
<td>Positive</td>
<td>1\textsuperscript{13} - And the larger new facilities are built dramatically different and there is a lot less pressure on cows than on a small farm because of this. ...Again the smaller farms are limited on their labour base. They try to do everything themselves, they rely on their family and a lot of things that should get done don't - but on a larger farm the larger farm is more structured and people are put in place to be responsible for certain aspects of the farm and they get done on a routine basis.</td>
</tr>
<tr>
<td></td>
<td>Two Interviewees</td>
<td></td>
</tr>
<tr>
<td>2). Not Related</td>
<td>Neutral</td>
<td>2 - Either you're a good cow-man or you're not.</td>
</tr>
<tr>
<td></td>
<td>Two Interviewees</td>
<td>3 - Not a huge difference. If the cow isn't treated right it won't produce so good, so those who aren't doing a good job won't survive.</td>
</tr>
<tr>
<td>3). Large-Scale or Factory Farm Style of Farming Negatively Effects Animal Welfare</td>
<td>Negative</td>
<td>2 - It's a family business and there are more people involved that aren't necessarily pulling the wage out. It's not a factory, you're doing it because you like doing it. But with the bigger farms you get to the point to where the farmer is, quote-unquote, a manager that sits in his office and tell people to do this. Those guys don't give a crap because they are just an employee doing their job.</td>
</tr>
<tr>
<td></td>
<td>Eight Interviewees</td>
<td>4 - In the US they have huge big farms, they don't work with each other they don't care about their cows. In the east they have 50 cows per farm, they have names and its almost like the cow are their children. This whole mentality</td>
</tr>
</tbody>
</table>

\textsuperscript{12} Since the interviews were open-ended the interviewees may have discussed the various concepts at any point or several times in the interview. Any one interviewee may have expressed all or none of the concepts. If an interviewee expressed the same concept twice it was not double counted. Therefore the maximum number of times (frequency) a concept could be expressed was thirteen, the number of the interviewees.

\textsuperscript{13} Each interviewee was assigned a number between one and thirteen.
| Concept 3 Con't | Like the family farm is still here in Canada and it wouldn't be here if supply management wasn't here. The US use [cows] like a machine. [Here] It's not that bad. Cows are not treated like machines... It's easier [for animal welfare purposes] when you have more than 50 because you can afford to buy some things so you can leave the cow in the barn. But not really big. ... The peak of animal welfare probably at about 150 cows because you have just enough money to buy equipment for welfare but still have ...

Large-Scale or Factory Farm Style of Farming Negatively Effects Animal Welfare |

7 - [Animal Welfare] It's a number things, it becomes more critical with 500 cows. You would be calving 5 cows a day. You have to have someone who really pays attention to that. Because of our location in Canada we have to have big buildings and they are costly to build. So what do you tend to do? You maximize your density of cows – simply because of the up front cost of the building. With a higher density, than perhaps on a smaller farm. That will create stress and problems with the cattle (so you have to use antibiotics) because more leg and feet problems and mastitis. This is very costly. The more stress you put on an animal the more stress you put on you; and something is going to give-so it becomes tougher to manage that. In the US where they just have to build sun shelters. It's not so bad because your capital outlay isn't so critical. But then you're dealing with massive amount of cows. And cows are a real social animal that prefers live with 50-60 each that they sort of understand their pecking order. As you increase density you will see problems because the animals won't have the space. And this is a big concern because it's a costly one. And that is why I am in so in favour of Supply Management. Because in lack of a better system it allows us to do some of these things that people say at least you are animal friendly or at least people say when we buy this dairy product we know that these animals aren't in factory farms. ... On the smaller system you see it again and again that producers will manage better because they will take the time and won't look at the clock. With farm employees that's your time that's your job that's what you do. This is where you find cracks in the system when you get that large, certainly when you are talking animal husbandry. If it's a construction company totally different issue because you are dealing with animals.

8 - Smaller dairies are definitely better. On the larger scale - not as good

9 - I can somehow imagine though that if the margins are really tight then you will be less likely to have the same level of investment; insuring that everything is done really well. It's not a given but you have to question.

10 - In BC all dairymen we all have land. Some more than
Large-Scale or Factory Farm Style of Farming Negatively Effects Animal Welfare

11 - When you have a larger herd. With the economies of scale, if we don’t have SM there is going to be a push for larger herd. The family farm is gone and suddenly you have this as leader of the farm you are managing people rather than cows. When you get into that situation, you have many employees. It’s not the same situation as being owner operated. It’s more difficult to keep track of 1000 cows as to 100 cows. It’s a whole different ballgame. It’s a big factory basically. Cull rate in the US. It is much higher. So the average life span of a cow is much lower. Disposal rate. They are leaving the farm a lot quicker in the states. It’s a combination of factors. BST has had some impact, that’s an opinion not scientific basis. When you get to those larger herds it’s difficult to pay individual attention to the animals opposed to the smaller herds.

When there is no cash, because all these things [like animal welfare provisions like raising your own calves and environmental stewardship activities] tie up cash ... and if the milk price is down you get rid of all those things. And that is the typical US style farm. You go there and there are 3000 cows milking and you won’t find a calf on the farm, maybe a day old one. But hardly anyone raises his own young stock. It takes up too much of their cash. These are things we would have to look at on our farms [with the loss of supply management]. It would be a huge change to what you call normal dairy farming.

13 - We get information from our vet. And they had cull rates in Canada and the US. There is a whole bunch of reasons to cull a cow. Bad legs, bad mastitis, can’t get pregnant. We look at the average in the industry and then we try to do better.

A real change in the style of farming [without supply management]. Somewhere along the line someone is going to take the hit. And in the US it’s probably going to be the cow. They are more aggressive with them. They push them harder.

<table>
<thead>
<tr>
<th>4). Lobby to Remove the Ban on BST</th>
<th>Negative</th>
<th>2 - Right now farmers don’t care about BST but there would be a big push to get it up here [without supply management].</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Three Interviewees</td>
<td>4 - Government probably won’t hold on the Ban [without supply management]. What will happen is we won’t have enough milk here to supply so the processors will say “hey listen pal” to the government “I need this milk from the US</td>
</tr>
</tbody>
</table>
and we have this growth hormone, I need this milk to stay in business”. So there will be this huge pressure.

7 - The government can’t maintain ban on BST [without supply management]. Because how can they tell a processor that they can’t use milk with BST in it when they have opened the borders, there would be a riot. You are just cutting away your own standards. That’s the problem. It becomes a see saw. What is economically and politically OK to do. You come into a different realm.

8 - [In Canada] you get your price for your milk and you know you can spend X amount of dollars for taking care of your cows. You go to New Zealand they don’t even wipe the shit off the cows - so all that stuff is in the milk because they can’t afford it. They are producing volumes of milk low cost, no infrastructure. They are standing in rain in conditions in Canada you would be put in jail for. Same in the US, look at California they have outdoor paddocks and they have no cover from the rain. They lie there dying. In Canada you would be put in jail.

9 - The main thing is the larger farms. There are other things -you can’t help but think - and I don’t have any data to verify this but with being more unpredictable [as would happen without supply management] and lower returns you have to question whether all the investments that should be are being made – like the ones that there isn’t such an obvious return for....

In BC the type of structure that you have is the 200-cow herd and those are very manageable. The cow has more freedom to move around. In fact, I would argue the cows behaviourally are better off on those farms because they can move around. Than the very small farms. In terms of how cows are handled on those very small older farms is that they were tied up in stanchions for months on end. That was just how they were managed. Now they are in free stall barn where they go lie down in comfortable dry stalls they eat when they want, it’s a very, they have a lot of freedom more than the really small farms. When you get into the really large - I don’t know. I can’t comment because I haven’t seen that many. I can somehow imagine though that if the margins are really tight then you will be less likely to have the same level of investment insuring that everything is done really well. Its not a given but you have to question... Under supply management where producers are more likely to invest into their operation whether it is from environmental, food safety or animal welfare perspective it is very fair to say that you have more of an assurance, under a system like that, that farmers are going to invest into their operations and you can count on the

<table>
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<th>and we have this growth hormone, I need this milk to stay in business”. So there will be this huge pressure.</th>
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<tbody>
<tr>
<td>7 - The government can’t maintain ban on BST [without supply management]. Because how can they tell a processor that they can’t use milk with BST in it when they have opened the borders, there would be a riot. You are just cutting away your own standards. That’s the problem. It becomes a see saw. What is economically and politically OK to do. You come into a different realm.</td>
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</tr>
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</table>

| 5). Less Time and Money to Devote to Animal Welfare | Negative | Five Interviewees

| 2 - You couldn’t afford to do it the way you do it now. |
| 8 - [In Canada] you get your price for your milk and you know you can spend X amount of dollars for taking care of your cows. You go to New Zealand they don’t even wipe the shit off the cows - so all that stuff is in the milk because they can’t afford it. They are producing volumes of milk low cost, no infrastructure. They are standing in rain in conditions in Canada you would be put in jail for. Same in the US, look at California they have outdoor paddocks and they have no cover from the rain. They lie there dying. In Canada you would be put in jail. |

| 9 - The main thing is the larger farms. There are other things -you can’t help but think - and I don’t have any data to verify this but with being more unpredictable [as would happen without supply management] and lower returns you have to question whether all the investments that should be are being made – like the ones that there isn’t such an obvious return for.... |

| In BC the type of structure that you have is the 200-cow herd and those are very manageable. The cow has more freedom to move around. In fact, I would argue the cows behaviourally are better off on those farms because they can move around. Than the very small farms. In terms of how cows are handled on those very small older farms is that they were tied up in stanchions for months on end. That was just how they were managed. Now they are in free stall barn where they go lie down in comfortable dry stalls they eat when they want, it’s a very, they have a lot of freedom more than the really small farms. When you get into the really large - I don’t know. I can’t comment because I haven’t seen that many. I can somehow imagine though that if the margins are really tight then you will be less likely to have the same level of investment insuring that everything is done really well. Its not a given but you have to question... Under supply management where producers are more likely to invest into their operation whether it is from environmental, food safety or animal welfare perspective it is very fair to say that you have more of an assurance, under a system like that, that farmers are going to invest into their operations and you can count on the |
quality. Then a system is less regulated. Where you have people running an operation who are constantly wondering and concerned if they are going to make it one year or five years... or however many.

11 - If we are deregulated look at the US. One item would be over crowding of the barn - you want to maximize number of animals per square foot of barn. Then you may have up to 50% more cows in the stalls. And this is a cow comfort issue and by doing that you are also reducing the feeding space per cow. So the cows can't lie down necessary when they want to lie down ... If you can get away with putting an extra 50% that is a cut to your capital cost.

13 - Right now in the states they aren't getting any money for their milk and look how they operate. They cut everything they don't do anything extra.... They will be forced to cut labour. You probably won't put as much into cow health issues. If there is no money that sick cow might be out the door faster. They don't have the quota system so they don't have to ship milk, we do. They look at like they have to put 200$ of medicine into the cow, well why don't I just take the 400$ for beef, in the low price times. Supply management says we have to fix that cow because we have to ship the milk. There is quite a difference.

6). Contracting out Calf Raising Negative 10 - In BC, all dairymen, we all have land. Some more than others and we all grow crops that we utilize through our feeding programs. In California or Idaho they strictly know cows. They don't crop any, they buy all the feeds be it grain, hay, silage. It all gets trucked in. They are there to manage and run a dairy operation. Strictly cows, feed, milk, help the cows, the babies are farmed out. They don't even raise their own livestock.

11- And these farms in the States are getting so large that they don't raise their own calves. We feed all our extra milk to the calves. They have calf ranches. The calves are born and then moved to another farm. If they can ship it all, they ship.

13 - What value to you put on keeping your own genetics or raising your own young calves the ways they are suppose to be raised. In the states they often, they sell them to a feedlot or calf. So cheaper is better. They try to get the calf to grow as fast as possible. We don't like to push it - if you try to get a heifer to grow too fast it can cause health issues. You go down to the calf raisers in the states and they have 4-5000 head of calves. Somewhere down the line is going to be the dead pile because you can't physically - here it's smaller. The calf guy takes a lot of pride in it – you
<table>
<thead>
<tr>
<th>(Concept 6 Con't)</th>
<th>just run through and feed them.</th>
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</table>

**Contracting out Calf Raising**

<table>
<thead>
<tr>
<th>7). Control</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Interviewee</td>
<td>7 - With smaller dairies ... 100-110 cow you have an advantage you can do things on a smaller scale and you can look after the details you have a similar or comparable land-base as a larger dairy but the control is better. You are more spread out rather than one big dairy.</td>
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<tr>
<th>8). Cull Rates will Increase</th>
<th>Negative</th>
</tr>
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<tbody>
<tr>
<td>One Interviewee</td>
<td>13 - There is a whole bunch of reasons to cull a cow. Bad legs, bad mastitis, can't get pregnant. We look at the average in the industry and then we try to do better. A real change in the style of farmer. Somewhere along the line someone is going to take the hit. And in the US its probably going to be the cow. They are more aggressive with them. They push them harder. US cull rates are higher.</td>
</tr>
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CHAPTER 4: RESULTS - DEREGULATION, DAIRYING AND SUSTAINABILITY: SUMMARY OF IN-DEPTH INTERVIEWS WITH STAKEHOLDERS IN THE FRASER VALLEY, BC

The following section summarizes the results of thirteen in-depth interviews with stakeholders related to dairy production in the Fraser Valley, BC showing interviewee opinions in regards to three main questions: (1) If supply management deregulated, how might industry concentration and market power change in the dairy industry in Canada, and how would this affect the competitiveness of BC dairy farmers; (2) what would be the socio-economic costs and benefits of this deregulation; and (3) what would be the ecological costs and benefits of this deregulation? For actual interview questions see Appendix: A. To see the collection of quotes used to create graphs see Appendix: B.

GRAPH 1: THE COST OF DAIRY FARMING: THIRTEEN INTERVIEWEES' PERCEPTIONS REGARDING THE ECONOMIC ADVANTAGES OF DAIRY FARMING IN THE US COMPARED TO CANADA

When discussing ‘cost of production’ differences between dairy producers in the US and dairy producers in BC, the majority of interviewees (ten out of thirteen) explained that economies of scale or the larger size of US producers, in general, gives US dairy farmers a cost of production advantage over BC dairy producers. Nine of the interviewees indicated that the use of BST (at least in the short-run) by some US producers enhances output of milk and lowers production costs for those US producers. The high level of subsidies enjoyed by US dairy producers results in a cost advantage for US dairy producers according to seven of the interviewees. Five and three of the interviewees suggested that lower labour standards and standards in general, respectively, enables US producers to lower costs. Better climate and more tax incentives were other factors, mentioned by a few of the interviewees, that help US producers maintain lower production costs compared with BC dairy farmers.
When asked what regions would BC dairy producers be competing with if supply management were deregulated, nine of the thirteen interviewees indicated the US in general as the major rival. Four to five of the interviewees mentioned California, Washington or Idaho as major competing regions, for both fluid and industrial milk. New Zealand and Australia were mentioned as major concerns regarding competition for industrial products such as butter and cheese, by six and two interviewees, respectively.
The most significant perceived change to the dairy industry in BC when considering the effects of deregulation, was that due to the resultant loss of market power by dairy farmers (and reduced profit margin due to loss of control over farm-gate price), a few very large US style farms would dominate dairy production in the province without supply management. Eleven of the thirteen interviewees expressed the above sentiment with a negative connotation. Eight of the interviewees specified that without supply management, the style of dairy farming in BC would significantly change for the worse. More neutral opinions relating to the effects on the industry in the absence of supply management include five interviewees who believed that given the current exchange rate, imports to Canada from the US would be limited and change would be negligible; and two who interviewees expressed that there would be a simultaneous increase in niche production and very large farms. One interview expressed that the industry would benefit in the long-run due to the increase in niche production that would occur in the province.
One consistent opinion that was expressed by a majority of the interviewees (ten of thirteen) was that if supply management were deregulated, investment in either the environment, animal welfare or food quality would decline - representing a potential negative effect on the dairy industry in BC.
When asked what would likely occur to socio-economic factors in BC's dairy industry if supply management were deregulated, interviewees generally expressed that the loss of supply management would negatively affect socio-economic equity. For example: ten of the interviewees articulated that the instability of farm income would increase in the absence of supply management; nine of the interviewees speculated that without supply management both the economy and farm income would be negatively affected; seven interviewees expressed that the economic spin-off effects from deregulation would be negative; two interviews equated the elimination of supply management with a loss of control over national food policy; and one interviewee stated that deregulation would be tough on family units.

Two interviewees communicated that the loss of supply management would only minimally affect farm income. And one interviewee expressed that the loss of supply management would increase employment in the long run and positively affect socio-economic equity.
When interviewees were asked how the deregulation of supply management would affect ecological sustainability, the interviewees were divided. Three interviewees expressed that ecological sustainability would decline because BC would increase the amount of imports coming from locations with lower ecological standards. Two interviewees explained that without supply management, styles would shift away from owner operated systems and as a result ecological sustainability would be negatively affected because an owner operator has more control over ecological management factors.

Seven of the interviewees expressed that without supply management, the importation of feed or the exportation of manure would increase, however, they did not identify this trend as ecologically destructive. Five of the interviewees felt that the loss of supply management would have a neutral effect on ecological sustainability because modern facilities are better able to deal with ecological issues such as waste management, and that has nothing to do with supply management. Two interviewees argued that environmental regulations have nothing to do with supply management, while two interviewees conveyed that there is no difference in manure management between small/large producers - also maintaining the opinion that the deregulation of supply management would have a neutral effect on ecological health.
Two interviewees believed that the loss of supply management would have positive effects on ecological sustainability because it is easier to manage a few large farms (which would happen without supply management) than a large amount of small farms.

GRAPH 7: THIRTEEN INTERVIEWEES' PERCEIVED IMPACTS ON ANIMAL WELFARE FROM DEREGULATING SUPPLY MANAGEMENT IN BC'S DAIRY INDUSTRY

- Improved technology enhances animal welfare (A)
- Not related (B)
- Extremely large-scale or factory farm style agriculture diminishes animal welfare (C)
- Lobby to remove ban on BST (D)
- Less money and time to devote to animal welfare (E)
- Contracting out calf raising (F)
- Better control with smaller dairies (G)

When asked what would be the effects on animal welfare from the deregulation of supply management, the majority of the interviewee responses indicated that without supply management animal welfare would decline. For example, eight of the interviewees indicated that the extremely large-scale or factory farm style dairy farms that would emerge in the absence of supply management would diminish animal welfare; five of the interviewees explained that without supply management, dairy farmers would have less money to devote to animal welfare issues; two interviewees stated that in the absence of supply management, dairy farmers would be more likely to contract out calf raising representing a negative influence of animal welfare; two interviewees
argued that there would be a lobby to remove the ban on BST if BC dairy farmers had to compete with US producers (which would likely happen without supply management) and that this would negatively affect animal welfare; and one interviewee explained that because larger dairies are likely to emerge without supply management, the loss of the system would negatively affect animal welfare because control over animal welfare factors is more effective with smaller dairies.

One interviewee stated that supply management and animal welfare are not related, and as a result the loss of supply management would not affect animal welfare. Two interviewees expressed that because smaller farms would be replaced with larger farms (without supply management) that animal welfare would improve because the newer farms would most likely have newer technology, which positively effects animal welfare.

When asked what would be the effect on food quality if supply management were deregulated, all of the interviewees expressed that quality has the potential to decline. Eight of the interviewees explained that quality would decline because dairy imports into BC from regions with lowers standards would increase without supply management. Six of the thirteen interviewees explained
that without supply management, quality would decline because the lower profit margins that follow the deregulation of the system will result in cows being pushed harder.

One interviewee stated that even if supply management were deregulated, quality standards would not change. Hence, the loss of the system would not affect the quality of dairy products in BC.
CHAPTER 5: SUSTAINABILITY AND SUPPLY MANAGEMENT - A DISCUSSION

Introduction
To investigate potential linkages between sustainability and supply management, I undertook an exploratory evaluation of what socio-economic and/or ecological costs and benefits may result in the absence of supply management, or deregulation of the system, in the Fraser Valley. Through in-depth interviews, a few clear trends emerged relating (1) market forces, (2) socio-economic sustainability and (3) ecological sustainability to supply management. I will evaluate and further explore each of these connections, outlined by the interviewees, drawing from additional literature.

The first section of this chapter outlines market concentration in the dairy industry and the competitiveness of the BC dairy producers in the context of the cost of production differences that exist between BC and US dairy producers. This section attempts to isolate the various forces that would likely shape the BC dairy industry in the absence of supply management by estimating what trends or changes in farm level characteristics are likely to occur if supply management were to be deregulated. Sections two and three evaluate the industry level trends that are likely to occur in the absence of supply management in terms of their effects on socio-economic and ecological sustainability, respectively. All sections rely on a combination of data collection methods. All data collection methods outlined in Chapter 2: Methodology contributed to the information discussed in this chapter, namely, a literature review, informal interviews and formal interviews.

Section I: Market Forces in the Dairy Industry

When trying to anticipate the outcome of the dairy industry in the absence of supply management, it is necessary to identify the forces that predominantly control the food system. Two factors that play a major role in determining the effects of deregulation are market power, and the competitiveness of BC dairy producers compared to US producers.

A). Market Power
Although market power was not an explicit topic in the in-depth interviews, interviewees constantly articulated that without supply management dairy farmers would lose a significant amount of power in the market, which is needed to ensure that dairy farmers receive a fair, economically viable farm-gate price. A vast majority of the interviewees (eleven of the thirteen) expressed the view that without supply management, due to the resultant fluctuating price (or loss of control over the price),
dairy producers’ profit margins would decline and BC would eventually be dominated by a few large US style farms that would be able to remain economically viable with a volatile farm-gate price (See Graph 3). However, one interviewee expressed that the industry would benefit from deregulation in the long-run due to the resultant increase in niche production. This suggests that this interviewee did not believe that changes in market power would negatively effect the dairy industry.

What is Market Power and What is its Significance?
When a few firms dominate an industry they gain a substantial amount of power and - with that control - they also possess the potential to manipulate the outcome of that industry disproportionately in their favour. This is termed ‘Market Power’ and can be defined as “a firms ability to maintain prices above competitive levels at its profit maximizing level of output” (United States Federal Trade Commission). The most typical methods employed to determine market power are analyses that focus on measuring market shares and the degree of market concentration (United States Federal Trade Commission).

Does Market Power Exist in the Food System?
According to Darrin Qualman in The Farm Crisis and Corporate Power a handful of firms dominate each link of the modern ‘food chain’ or food system (See Table 3).

<table>
<thead>
<tr>
<th>TABLE 3: MARKET POWER</th>
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<tr>
<td>FOOD CHAIN LINKS</td>
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<td>---------------------</td>
</tr>
<tr>
<td>Oil and Natural Gas</td>
</tr>
<tr>
<td>Fertilizer</td>
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<tr>
<td>Chemical and Seed</td>
</tr>
<tr>
<td>Machinery</td>
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<tr>
<td><strong>Banking</strong></td>
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<tr>
<td><strong>Farmers</strong></td>
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<td><strong>Grain Handling</strong></td>
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<td><strong>Railways</strong></td>
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<td><strong>Food Processing</strong></td>
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<td><strong>Food Retailing</strong></td>
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<td><strong>Restaurants</strong></td>
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Each of these links in the food system is connected to some aspect of dairy production through either the inputs or the outputs of the industry. The one feature that stands out in this chain, as Qualman points out, is that a few giant transnational corporations dominate almost every link. The exception is the farm link (See Table 3).

Market power is often understood as a major obstacle to sustainability. According to the United Kingdom Sustainable Development Commission (2001), many organizations and individuals have concerns regarding the concentration of power in big corporations: supermarket chains, trading organizations, agrochemical firms etc. The Commission acknowledged that “the increasing concentration of food retailing [is viewed by many as a] major anti-sustainable force through enforced standardization, unsustainably low incomes for farmers, unnecessary waste, profiteering by artificially inflating the price of premium (organic, free range etc.) products, undermining of local stores, and increased transport.” It has also been suggested that that the increasing power of agrochemical companies and Genetically Modified Organism (GMO) producers threatens farmers’ autonomy and genetic diversity, and is a particular threat to the organic food sector (United Kingdom Development Commission, 2001). Moreover, concentration of power violates the conditions necessary for perfect competition and acts as a barrier to effectively operating markets.
One major concern related to market power is: do the controlling players abuse their position and exploit those in a less dominant situation? One way to determine this is to compare profits across sectors of the food system. Looking at 'Return on Equity’ - as Calculated by Qualman (2002) - which is a common measure of profitability, suggests that farm profitability is significantly lower than profitability in other links (See Table 3). This strongly suggests that the companies that dominate each link also use their power to enhance their profit.

**Does Supply Management Effectively Counter Market Power?**

One of the historic and current objectives of supply management is to neutralize the market concentration held at the other levels of the food system. To investigate whether supply management effectively counters this market power, it is useful to compare: farm-gate price volatility; retail shares; and price trends, of the Canadian supply managed dairy industry with those in the non-supply managed dairy industry in the US and the non-supply managed industries in Canada.

Comparing farm-gate price of dairy products in the US to Canada dairy products suggests that supply management has had an influence in countering market power of non-farm businesses. For example, between 1986 and 2000 the Canadian farm-gate price has increased from $C0.38 per litre to $C0.50. In the US, farm-gate price has fluctuated from a low of $C0.30 per litre to a high of $C0.49. On average the Canadian farm-gate prices were 17.8% higher than the US (BCMAFF, 2002, p.18).

In addition, Canadian producers of supply managed commodities in general receive a much greater percentage of retail prices than other producers around the world (BCMAFF, 2002). For example, in Montreal, dairy producers receive 54% of the retail dollar spent on milk, in London, UK, producers receive 35%, in Chicago, US, they receive 31%, and in Buenos Aires, Argentina, they receive 20% (DFC (3), 2002). This relatively high share of retail dollars by Canadian dairy producers further supports the argument that supply management levels the playing field between farmers and other links in the food system.

Interestingly, this has not translated into higher costs for consumers. For example, the price of a basket of dairy products in Canada has been consistently lower compared to the US since 1996.

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14 A basket of dairy products includes an assortment of dairy products – milk, various types of cheese, yogourt, powdered skim milk, evaporated milk and ice cream.
(DFC (3), 2002). When comparing the evolution of the farm retail spread\(^{15}\) in Canada versus the US it has been observed that in Canada, retail and producer prices are closely related but in the US, retail prices have risen over 30% while producer prices are very volatile (DFC (3), 2002). This again has been attributed to the price stability accorded by supply management, which demonstrates that dairy farmers have, to a degree, been able to offset the market power at other sectors of the industry (IFAP, 2001).

Contrasting dairy production with non-supply managed agriculture sectors within Canada, such as pork, also demonstrates that supply management has played a role in countering market power. For example, when comparing average net operating revenues of dairy production to a non-supply managed commodity like hog production, trends in net operating revenues of dairy production are consistently more stable and usually higher (See Graph 9). Further, compared to all farms, the average net operating income\(^{16}\) of dairy farms has been consistently higher from 1990 – 2001 (See Graph 9).

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**GRAPH 9:**

**AVERAGE NET OPERATING INCOMES 1990 - 2001: ALL FARMS, HOG FARMS, AND DAIRY FARMS - CANADA**

(Statistics Canada, 1996 – 2002\(^{17}\))

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\(^{15}\) Farm Retail Spread is the difference between the farm gate price that the farmer receives and the retail price that the consumers pay – for any given commodity.

\(^{16}\) Net Operating Income is profit of a farm operation measured by total operating revenues less total operating expenses, before depreciation, and before other adjustments for tax purposes.

\(^{17}\) Statistics were unavailable for 2000 and only partially available for 2001.
One can summarize from this discussion of market power and the dairy industry, that although there may be other factors involved with market power, supply management has played a role in levelling the playing field. And without supply management dairy producers in Canada would lose a significant amount of power and financial stability in their industry.


As indicated by the interviewees, there was concern that deregulation would lead to a decrease in market power held by dairy producers or an increase in market power at the other levels of the foods system (See Graph 3). To further investigate this concern and to estimate what might happen to the BC dairy industry in the absence of supply management we must also investigate how competitive the industry is internationally, or at least in relation to the US. The literature suggests that subject to the influence of exchange rate fluctuations, Canadian production costs are generally above those in the US in raw milk production, however, Canada may be competitive with the US, at the current exchange rate \(^{18}\) (AAFC, 1996. p.33), (Barichello, 1999. p.57). The literature also suggests that for Canadian dairy producers to be competitive internationally, they will have to quickly move toward a fewer number of larger dairy operations - as in the US (Cropp, 1999).

This premise that the competitiveness of Canadian dairy producers is relatively unpredictable - due to the exchange rate - and would depend on the industries ability to mimic the trends in the US, is also supported by the interviews conducted. *Eleven of the thirteen interviewees expressed that if supply management were no longer in place, the individual BC dairy farms that would be competitive in the long-run, would be the farms that were able to grow and change to a size and style of farming similar to US producers* (See Graph 3).

Following from this – in the absence of supply management - one can predict that the BC farm structure would most likely resemble the production style in the regions from which competition would come. Given the perishable nature of fluid milk, competition would more than likely occur from regions within a certain distance. This would include Washington, Idaho, and as far as California. This is also supported by the interviews (See Graph 2). Industrial milk is far less perishable and it is likely that competition would not be limited to the US. However, for the purposes of this thesis, discussion will be limited to comparing BC with the US Pacific Region (Washington, Oregon and California) and Idaho.
What are the Cost of Production Differences Between BC and US Dairy Producers?

To help understand how US producers survive in an environment with less control over price and profit, than Canadian diary farmers, I will briefly expand on the cost of production factors that potentially provide US producers with a competitive edge over BC dairy producers. As discussed earlier, the stronger the Canadian dollar, the greater the effect these factors will have on the BC dairy industry. In the literature there is a significant amount of disagreement regarding costs of production between the two countries. In summarizing the issue, Smitz and Smitz (1999. P.134) present two tables on the subject, one shows Canadian and US production costs as equal and the other demonstrates that Canadian dairy production costs are significantly above US production costs. Below I expand on four attributes – identified by the interviews conducted - of the US dairy industry that have lead to cost of production advantages for US dairy producers. Namely, i) Size and Economies of Scale; ii) Recombinant Bovine Somatotropin; iii) Subsidies; and iv) Questionable Labour Practices. Other attributes identified, that I did not elaborate on, were: generally lower standards; better climate; and state use of tax incentives to attract in dairy farmers.

i). Size and Economies of Scale

Ten of the thirteen interviewees reported that ‘economies of scale’ gave producers in the Pacific Region a cost of production advantage over BC dairy farmers (See Graph 1).

Evidence points to the rapid trend in the US dairy industry toward fewer and larger dairy operations that can produce milk at substantially lower costs (Cropp, 1999. p.58). In the US, where farm structure has been unimpeded by supply management, dairy farms have grown considerably larger than in Canadian dairies. The contrasts between the two countries are striking and are attributed largely to supply management (Knutson et al, 1996). In BC, the average dairy farm has 90 milk cows with a few farms in the Fraser Valley with herds in the 1000 cow range (BC Milk Producers, 2002). Supply management caps a maximum on quota holding at two percent of provincial allotment. In the US, on the other hand, some dairies in the tens of thousands are being approved. For example, in Tulare County in the Central Valley of California, the top milk-producing county in the US - a 14,000-cow dairy was just approved to start up in the area. In California, 78% of the total cows in the state are on farms that have over 500 head; in Idaho, 61% of the total cows are on farms over 500 head and in Washington, 47% of the total cows were on farms with over 500 head (Weida, 2000. p.18). The average herd size in California in 2001 was 692 (Dairy Issues Form, 2001). In some counties in California, such as Tulare County, the average herd size was 1,200 cows per farm in 1999 (University of California, 2000). In Idaho, in 2001 the average size was 430 and in Washington the average size was 363 (Ahmadzadeh & Falk, 2002).

18 For a more extensive discussion see ‘The Economic Debate’ in Chapter 1.
In the US, where milk producers are struggling to adjust to markets that are increasingly dependent on the forces of supply and demand, the industry has experienced dramatic structural changes. The average herd size has increased at a rapid rate. For example: in California there was a 391% increase in size from 1970 to 1998; in Washington there was a 674% increase; in Idaho the increase was 1135%; and in the US, on average, the increase was 329% (Lin, 2000. p.2). In Canada the average increase in average number of cows per farm was 180% from 1970-71 to 1999-2000 (DFC (2), 2002).

Further, in the US, as markets have become more competitive, the regional distribution of milk production has changed rapidly and has shifted toward less traditional dairy regions. The highest growth has occurred in the western states and in particular California (Lin, 2000. p.1). In these regions the farms are not only characterized by very large, specialized production styles but also with a small and declining cow per acre ratio. The economies of scale that accompany these large farms gives these producers the necessary access to substantial capital resources needed to survive in an environment with small profit margins and fluctuating farm-gate prices. Feed and labour efficiency also significantly improves with the size of the operation (Short, 2000. p.III).

**ii). Recombinant Bovine Somatotropin**

Nine of the thirteen interviewees indicated that the use of Recombinant Bovine Somatotropin (BST) or Bovine Growth Hormone (BGH) gives producers in the US a cost of production advantage, at the very least in the short-run (See Graph 1).

In 1994 the US Food and Drug Administration approved the marketing and sales of Monsanto’s BST. It was the first gene-spliced food product on the US market. When injected into cows it has the potential, in the short run, to elevate milk production by 25% (Boyens, 1999. p.75). In an effort to improve competitiveness many dairy farmers in the US now use BST. In the Pacific Region, on average, 80 cows per farm are injected (USDA, 2000).

**iii). Subsidies**

Seven of the thirteen interviewees expressed that farm 'subsidies’ give a significant advantage to dairy producers in the US.

US agriculture policy is not an unregulated industry but rather a complex system that has a long history consisting of price supports and a government sponsored cartel that practices price discrimination but does not limit total production, and import barriers. Currently, dairy subsidies
significantly affect milk production in the US. Many aspects of the new Farm Bill in the States serve to maintain existing dairy policy. A support price for milk remains at US$9.90/cwt and the Export Incentive Program is extended to 2007. A more significant program is the New National Dairy Market Loss Payments Program. The anticipated impact varies across farms, but it has been estimated that a Washington dairy farm could receive as much as US$ 13,440 in increased income (Martin et al, 2002. p.39).

This situation in the US, in the event of deregulation of supply management, would place Canadian producers in a disadvantaged position. Since a support price still exists in the US and there is no limit on supply, the government stands prepared to purchase unlimited quantities of butter non-fat dry milk and cheese (Baily, 2002). Price supports, coupled with direct payments from government regulation in the US, have the potential to encourage production - fuelling volatile price swings acting almost like an exaggerated free market situation. This is the opposite effect of supply management, with its set price level and production quotas.

Ironically, much of US Agriculture regulation was established, like supply management, to protect farmers and stabilize rural economies by counterbalancing market power. It originally included a voluntary supply management program, but in the 1970’s and 1980’s transitioned toward increasingly globally-oriented incentives to farmers, and direct subsidies for overseas sales. These policies encouraged production increases for the global market (The Rural Coalition, N.D.). While US agriculture supports still attempt to stabilize farm income, they it no longer target supply restrictions.

**iv). Labour Practices**

Five out of the thirteen stakeholders interviewed reported that lower labour standards in the US give some US producers a cost of production advantage over BC producers (See Graph 1).

For the purpose of this study 'lower labour standards' includes illegal and minimum wage labour. According to a study by the USDA, labour efficiency has the greatest effect on economic profit per cwt of milk sold and on economic profit per cow (Short, 2000. p.iv). However, official statistics reveal that wage differences between the regions are not significantly different. The average livestock labourer (this includes dairy) in Washington and Oregon is C$11.13 per hour, approximately C$0.02 per hour (NASS, 1997) lower than the C$11.15 per hour wage for livestock labourers in BC (Bomford, 1999). In California, the average livestock labourer wage was slightly lower at C$9.86 per hour

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19 Exchange rates are based upon annual averages over the past five years for Canada and the US. Accessed via http://www.triacom.com/archive/exchange.en.html
However, unrecorded labourers might be the real issue. Documented by the Migrant Photography Project (MPP) in the Central Valley, California, migrant low paid labour is actually common in the most productive milk-producing region in the US. As in the fields, packinghouses and restaurants, labour in dairies in the Central Valley is often migrant labour from Mexico. The labour is all male and is highly skilled. Both men with papers, and men without, work in the dairy industry. The jobs on the higher end of the technical spectrum are second generation. Wages are currently fixed salaries paid twice a month but the owner is pushing for the lowest cost option: hourly minimum wage. Although this does not confirm that there is a significant amount of questionable labour practices in the US, it does suggest the possibility. I discovered no evidence of illegal or migrant farm labourers in the dairy industry in BC.

v). Miscellaneous
Other factors the interviewees attributed to lower costs of production in the US included: ‘generally lower standards’ (3); ‘better climate’ (2); and state use of ‘tax incentives’ to attract in dairy farmers (2) (See Graph 1).

Market Forces: Conclusion
In conclusion, market power does exist in the food system. Even in the US, today’s largest dairies are small when compared to national and international processors and retailers. Supply management to some degree counters this market imbalance. The above evidence suggests that the deregulation of supply management would most likely result in: lower and less stable farm-gate prices; loss of revenue for farmers; and a tighter profit margin and operating budget. To remain competitive in a free(er) trade environment, dairy producers would be forced to mimic the lower cost of production strategies employed in the US. Further, in the event that deregulation of supply management was not matched by deregulation of US dairy policy, or depending on which US policies were deregulated, the situation could result that Canadian producers would be competing against US producers who receive direct payments and a floor price. This circumstance would be even more troublesome for Canadian diary producers than just having to exist in an environment characterized by market power at the other levels of the food system. Despite the potential US policies - such as price supports and directs payments - have to affect the competitiveness of BC dairy producers, this subject is not within the scope of this thesis and consequently, will not be discussed further.

Some of the cost of production tactics, as identified by the interviewees, that enable US producers to enhance competitiveness are: size and economies of scale; BST; subsidies; and lower labour standards. It is possible that BC dairy producers could emulate some of these strategies, but not others. For example:
Size and Economies of Scale – It is very possible that without supply management dairy producers would employ this strategy to increase competitiveness.

BST – Due to the federal ban on the use of BST, it is not likely that BC dairy farmers would use BST to enhance milk production.

Subsidies – As of 2002, Canadian dairy farmers no longer receive direct payments from the government and it is highly unlikely that subsidy programs will be re-established.

Lower Labour Standards – I did not uncover significant proof, in the scope of this thesis, to conclude that US dairy labourers receive substantially lower wages than BC dairy labourers.

This suggests that in a market – like the US – that relies to a greater extent on supply and demand to dictate price and quantity, structural changes - responding to the increased competition - are necessary for dairy farmers to remain economically viable. As a result it is likely that - of the production costs identified by the interviewees - dairy producers on average would increase farm size faster than the current rate or be forced to leave the industry. It is also possible that average dairy labourer wages would decline. (Any further socio-economic and ecological sustainability implications related to the loss of supply management and the ensuing loss of power experienced by dairy producers will be further discussed in Sections II and III.)

Section II and Section III: Socio-Economic and Ecological Costs and Benefits of Supply Management

Building on interviewee sentiments regarding the costs and benefits of supply management, the following section outlines the potential ecological and socio-economic trends that are likely to accompany the deregulation of supply management in the dairy industry. This is divided into two categories: ecological sustainability and socio-economic sustainability. The ecological category includes two sub-categories (a) environmental consequences and (b) food quality and animal welfare.

In order to discuss the socio-economic and ecological costs and benefits of supply management it is useful to anticipate the effects in the absence of this system. Following from this, Section II and Section III focus on the potential socio-economic and ecological effects that are likely to occur with
the deregulation of supply management. It analyzes the potential effects by comparing ecological and socio-economic trends in BC to regions in the US that currently utilize cost of production strategies that BC producers are likely to employ in the event of deregulation. This section also identifies the potential ecological and socio-economic consequences from increased trade with these regions.

SECTION II: SOCIO-ECONOMIC SUSTAINABILITY

Does supply management contribute to the socio-economic objectives of a community food system as outlined in Chapter 1? Does it enhance the working and living conditions of labourers, the needs of rural communities and the concept of food security?

Current market trends - such as: the US farm-gate price being on average 17.8% lower than in Canada; the price of dairy products in Canada remaining below US prices since 1996; and Canadian dairy producers receiving a greater percentage of the retail dollar compared with the US, United Kingdom and Argentina (DFC, 2003 (3)) - reveal that supply management, to some degree at the very least, does offset market power wielded at other levels of the food system. When examining transfer payment from between the sectors including tax payers, farmers, processors and retailers it becomes evident that Lippert's (2000) estimated C$ 839 – 987 million consumer/tax payer transfer to dairy producers and the OECD 's fifty-eight percent out of every dairy dollar Producer Subsidy Equivalent (See The Economic Debate section for further details), can more accurately be described as a transfer of wealth that flows from the retail and processor sector to dairy farmers. Given the huge amount of market and financial power these levels of the food system possess (especially the retail sector), a transfer of this nature can be viewed as a positive influence on socio-economic equity. Hence, without supply management it is likely that the transfer of wealth will redirect and flow from the farming sector to the processing and retail sectors.

Moreover - as has already been discussed - if the BC dairy producers were to be competitive in a deregulated system, they would more than likely have to transform production size and density to resemble dairy production in the US Pacific Region and Idaho. Consequently, it is useful to investigate the differences in socio-economic issues between BC and the Pacific Region in the US and Idaho, in an attempt to infer possible changes in the BC system.
**Do Regions (Without Supply Management) Experience Lower Levels of Socio-Economic Equity?**

Although farm incomes depend on a number of factors, the fact that the US farm-gate price is on average 17.8% lower suggests that farm income would be negatively affected by deregulation (BCMAFF, 2002. p.18). Consequently, it is also possible that dairy labourers wages in BC would be lowered as a result of the elimination of supply management. This is because the average dairy labourer wage is above minimum wage, and it is probable that given the trying economic times that could follow the elimination of supply management, that the wages of dairy labourers could fall from C$11.15 per hour closer to the minimum wage.

"Large dairy CAFO's with concentrated masses of animals, [that have emerged in the US] neither diversify a rural economy nor improve the long term economic health of a region" (Weida, 2000, p.8). Research demonstrates that as local farm size increases, the percentage of local farm expenditures falls sharply (Weida, 2000). If BC dairy producers follow the same path, as US dairy producers, in an attempt to stay competitive, Weida's research suggests that the socio-economic effects on the BC economy will also be negative.

Further, with the shift to a fewer number of larger farms, economic equity would be negatively affected due to the control of the sector shifting to a fewer number of people. The interviews conducted support the assertion that deregulation of supply management will negatively affect socio-economic equity. Ten of the thirteen interviewees expressed the view that instability of farm income would increase without supply management (See Graph 5). Nine out of the thirteen interviewees stated that the elimination of supply-management would negatively affect farm income and the economy and seven out of the thirteen indicated that negative economic spin-offs would occur with deregulation (See Graph 5). Two interviewees suggested that deregulation would have a minimal effects on farm income and one interviewee believed that employment would increase in the long-run if the dairy industry deregulated (See Graph 5).

The recent Australian dairy experience further supports the premise that farm income and farm communities would be negatively affected by deregulation. In Australia, where the industry deregulated in 2000, it has been documented that the removal of the milk support price followed a lowering of farm-gate price, and a consequent loss of income across all states. This analysis included the support packages given to the dairy farmers from the government (ABARE, 2001).

There has also been an increasing amount of accounts related to the social, ecological and local economic effects of these transitions. In Australia the commissioned report *Social Impacts of Dairy Industry Deregulation and Water Reform on Dairy Farmers and Communities in the Bega Valley*
calculated that the loss of 121 family dairy farms equates to a loss of $52.9 million dollars, of which most is spent locally ("Social Impact of Dairy"). A similar experience has also occurred in the UK with the abolition of the Milk Marketing Boards in 1994. Although farm-gate prices initially rose, the average dairy farmer is now incurring an annual deficit due to the deregulation (Houghton, N.D.).

**Conclusion**
In summary, it appears that even if the BC dairy industry were able to remain competitive with the US industry - with regards to the deregulation of supply management in dairy- the transition necessary to achieve this would have substantial and large negative effects on socio-economic sustainability. The transfer of wealth from farmers to other more financially powerful levels of the food system such as the retail sector, a fewer number of producers controlling a larger percentage of production - and the possibility of labourer wages declining - represents a negative influence on socio-economic equity. Moreover, a trend toward larger farms represents a transition away from perfect competition and consequently a shift away from effectively operating markets.

**SECTION III: ECOLOGICAL SUSTAINABILITY**

Does supply management help foster a long-term maintenance, preservation or symbiosis with the ecosystem as part of the Community Food System vision developed in Chapter 1 - or does it act as an institutional barrier in the development of this vision?

This is challenging to determine because the direct ecological costs and benefits of supply management are difficult to examine. The historic and current objectives of supply management do not target ecological health. **Two of the 13 interviewees expressed that supply management is not related to ecological health and 5 explained that the controlling variable with manure management (a major ecological factor), is related to the nature modern facilities not supply management (See Graph 6).** However, given the interconnectedness of the economy and ecology several links emerged.

The most consistent sentiment that was expressed by the interviewees was that without supply management, dairy producers are less likely to invest in the aspects of dairy production that are less directly related to cash flow. Due to the reduced profit margins that would most likely follow deregulation, dairy farmers would be pushed to divest in activities that were not immediately related to cash generation - including ecological stewardship, animal welfare, and food quality. This is particularly true because a large amount of the ecological regulations in BC are based on voluntary
participation (See Chapter 1). Ten of the 13 interviewees expressed that with a reduced profit margin, which would occur if supply management were eliminated, investment in the environment, animal welfare or food quality would decline (See Graph 4).

This premise is supported by Bradshaw and Smit (1999). They suggest that reduced government intervention “results in greater environmental degradation as farmers seek to counteract declining revenues by increasing production ... [as a result] less attention is paid to farm-level environmental stewardship in order to reduce short term costs” (Bradshaw & Smit, 1999. p.2). They highlight that financial insecurity amongst agricultural producers, and its subsequent impact upon planning horizons, has long been acknowledged as a barrier to environmental stewardship. Martin and Woodhill argue “that low levels of individual security are incompatible with sustainable agriculture because the biophysical environment is not only used as resource to bank on price downturns, but it is similarly exploited in order to capitalize on upturns” (Cited in Bradshaw & Smit, 1999. p. 4). Bradshaw and Smit present historical evidence from the period up to and including the 1930’s depression to support the hypothesis that "given highly variable prices, farmers tend to exploit the natural environment by aggressively expanding production during buoyant periods and banking on the farm resource base during depressed periods" (p.4).

Additionally, Bradshaw and Smit argue that the removal of price and income stabilizing government intervention, in tandem with other acts of agricultural deregulation, “not only erodes the protective mantle which buffers farmers from commodity market fluctuations, but may also augment these fluctuations” (p.3). As a result, this can be expected to increase farmer insecurity and reinforce exploitation of the biophysical environment.

As has already been discussed, if the BC dairy producers were to be competitive in a deregulated system, they would more than likely have to transform production style/size to resemble dairy production in the US Pacific Region and Idaho. Consequently, it is useful to investigate the differences in ecological issues between BC and the Pacific Region in the US and Idaho in an attempt to infer possible changes to the BC ecosystem. The question becomes: Do these regions (without supply management) experience an increased level of ecological issues? The ecological issues will be divided into two sections: (a) environmental consequences; and (b) food quality, and animal welfare.
A. Environmental Consequences of Dairy Farming: BC versus the Pacific Region and Idaho

What are the Potential Ecological Impacts from Dairying?

In dairy production, one of the key ecological concerns is manure management. According to the BCMAFF State of Resources Report the main ecological issue related to dairy farming is: Do farmers have sufficient land and storage to use manure in a safe manner as a fertilizer for crop production (Bertrand, 1999. p.7). Although manure can be a valuable fertilizer, if it is applied at the wrong time of year, or in too large of quantities, it can be catastrophic for ecosystems.

The excess manure that is not absorbed by the vegetation can run into rivers, streams, groundwater and air. This can harm the waterway, human health and aquatic life. Nutrients such as nitrogen and phosphorus, pathogens like bacteria and viruses and heavy metals are the primary concerns (NRDC, 1998. Chapter 1, p.2). Phosphorus is toxic to fish at elevated levels, and at lower levels phosphorus and nitrogen can cause eutrophication. Severe oxygen depletion is an effect of this process, which can suffocate fish and eggs or starve them by killing their prey. An extreme example of this is the “dead zone” in the Gulf of Mexico, which is responsible for killing an extremely large number of fish. Other related problems are: noxious algae (toxic effect on marine life) and pfiesteria piscicida (implicated with major fish kills and is also toxic to humans).

Air-born ammonia is a toxic form of nitrogen that causes algae blooms in coastal waters and consequently kills fish. Open-air lagoons emit ammonia into the air that can travel hundreds of miles before returning to the earth through precipitation. Some states such as North Carolina have experienced a doubling of ammonia in the rain during periods of major livestock expansion (NRDC, 1998. Chapter 1, p.3). The Natural Resource Defence Council (NRDC) in their report ‘America’s Animal Factories’ also concluded that human health is at risk from animal waste pollution. Animal waste may contain pathogens such as fecal coliform that have caused gastrointestinal illnesses when found in drinking water (NRDC, 1998. Chapter 1, p.3). Other issues related to nitrogen leaching into drinking water supplies are: increase risk of blue-baby syndrome (which can cause infant death); spontaneous abortions; increased pfiesteria (which can cause skin irritations, short term memory loss and other cognitive impairments).

Antimicrobials, which include antibiotics, are also intensively used in animal factories. “There is growing evidence that animal use of antimicrobials is tied to the evolution of multiple drug resistance in food borne disease agents and the loss of efficacy of drugs is important in human medicine” (NRDC, 1998. Chapter 1, p.4).
Other ecological concerns, related to manure management, are placement of manure lagoons in high risk ecosystems, groundwater depletions, air-pollution from methane and increased greenhouse gas emissions from increased transportation.

**Pollution in the Pacific Region and Idaho Due to Dairy Farming**

Although it is difficult to compare environmental health between regions due to inconsistent statistics across studies, evidence does suggest that the dairy industry in the US - and in the Pacific Region in particular - has lead to a significant amount of pollution.

In the US, due to the rapid increase in size and density of animal farms, there have been "numerous studies and reports over the last decade [that] have indicated a need to strengthen the regulatory requirements on livestock operations" (Meyer, 1999. p.1420) As a result, the Environmental Protection Agency (EPA) has attempted to regulate the large dairy farms by designating the larger ones Confined Animal Feeding Operations (CAFO). It has been estimated that CAFO are responsible for over 50% of excess manure nitrogen in the US (Environmental Power Corporation, 2001). These problems are due to a lack of enforcement of the federal Clean Water Act (CWA), and loopholes in the implementations of regulations and a failure at the state level (NRDC, 1998. Introduction, p.2). State level initiatives to deal with CAFO pollution issues are inconsistent. "The CWA does not regulate most land application of animal manure directly nor does it address order control or impacts of manure nutrients to groundwater. These topics are regulated by the state or local authorities, if at all" (Meyer, 1999. p.1420). Some states (such as Idaho) continue to take aggressive steps to attract CAFO's and grant these operations government benefits, which were originally designed to help family farms (NRDC, 1998. Introduction, p.2). Further, despite government efforts, the current history of CAFO's show that cheating is likely, mostly due to a lag in enforcement to effectively deal with the increased capacity of CAFOs' waste generation (Weida, 2000. p.12).

The accelerated trend in the US toward extremely large dairy operations has created an enormous increase in the concentration and quantity of manure that is generated at a single site. This is because the economic viability of dairy operations continues to drive herd size and density decisions, and as a result animal densities per hectare continue to increase (Meyer, 2000. p.1426). According to the 1997 Census on Agriculture, California increased from 6.26 cows per acre in 1993 to 7.81 in

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20 A Concentrated Animal Feeding Operation (CAFO) has been defined as large facilities with over 700 lactating and dry dairy cattle or medium facilities 200 - 699 lactating and dry cattle that discharge waste into surface water (Meyer, 2000. p.1419).
1997; Washington increased from 3.2 cows per hectare in 1993 to 4.5 cows per hectare in 1997; and Idaho's density rose from 2.3 cows per hectare in 1993 to 3.5 in 1997 (NASS, 1997).

The higher the animal density on farms, the higher the concentration of manure on the land. The NRDC's report explained how this increase in manure concentration has spawned environmental disasters in many states. Some of the issues include:

- Manure run-off has been identified as a culprit in the contamination of fisheries along 60,000 miles of streams (U.S Fish and Wildlife Service quoted in NRDC, 1998. Introduction, p. 2).
- In 17 states, groundwater is impaired by feedlot manure containing fecal streptococci and fecal coliform bacteria (US Environmental Protection Agency. Quoted in NRDC, 1998. Introduction, p.2).
- In some states, the level of ammonia in rain doubled between 1985 and 1996 (NRDC, 1998. Chapter 1, p.3).
- In 1993, a pathogen suspected to have originated in dairy manure was found in Milwaukee's drinking water. One hundred died and 400,000 became sick as a result (NRDC, 1998. Chapter 1, p.3).
- Over 40% of antibiotics sold in the US are used in agriculture; 80% by weight, for growth promotion, and 20% for treatment of animal disease.
- In Washington, runoff and spills are significant sources of water pollution in the state. Portions of the Yakima River, in the central and south central part of the state, have been determined by the Washington Department of ecology to exceed the water quality standards for fecal coliform (NRDC, 1998. Chapter 28, p.1).
- In Washington, in 1998, 2 feedlot operations accidentally dumped the entire contents of their lagoons. This resulted in 2 million gallons of raw lagoon waste being dumped into the Yakima River within a week. The fines collected from the 2 dairies were US$2000 and US$3000 (NRDC, 1998. Chapter 28, p.2).
- California is the number one milk producer in the US. Most dairies in this state are concentrated in the Central Valley. The Central Valley is located southeast of San Francisco and extends down to Los Angeles. It provides drinking water for many nearby cities. In total, about 65% of the state's drinking water is serviced from the valley. Its 891,000 cows create as much waste as 21 million people (NRDC, 1998. Chapter 4, p.1). California's Water Resource Control Board 1996 water quality report concluded that dairies and other animal feeding operations in the Central Valley are responsible for poisoning a hundred square miles of groundwater, rivers and streams (NRDC, 1998. Chapter 4 p.2).
- "State and federal inspectors suspect that a majority of California's 2,400 dairies are regularly allowing manure to pollute water ... From Fresno to Kern County ... more than half of the 50
farms inspected had problems that threatened ground water” (Loss Angles Times Quoted in NRDC, 1998. Chapter 4, p.2).

- Water quality problems exist in California, due to livestock operations, including nitrate pollution in 10,000 square miles of aquifers. Due to the wide spread contamination in the Chino basin, dairies have migrated north to Tulare County (NRDC, 1998. Chapter 4, p.3).

- Water quality officials suspect that dairy manure is a significant cause of a number of native species being listed or proposed to be listed under the Federal Endangered Species Act (NRDC, 1998. Chapter 4, p.2).

- In total the state of California has 22 ground water basins and 15 waterways classified as “impaired” or significantly polluted by livestock operations (NRDC, 1998. Chapter 4 p.2).

- It has been reported that in California’s Central Valley, cows have aborted calves after drinking water from wells contaminated with nitrates.

- With CAFO’s, manure is often used to fertilize crops that are not on the same farm and consequently have to be shipped a greater distance than a farm that uses its manure as fertilizer on site. This increases greenhouse gas emissions.

**Pollution in BC from Dairy Farming**

Although many factors could be involved, the level of pollution in BC due to inadequate manure management from dairies appears to be considerably lower in Canada. Schreier et al in *Issues, Trends and Concerns about Agricultural Nutrient Management in the Lower Fraser Valley* concluded that over the recent decades there has been an intensification of livestock production in the Fraser Valley. This factor has significantly contributed to nutrient overloading and water pollution in a number of districts in the Fraser Valley (Schreier et al, 2000).

However, when looking at average animal densities per hectare (dairy cow equivalents based on nitrogen excretion), dairy farms in BC averaged 2.3 animals per hectare (Betrand, 1999BCMAFF, 2000). This is lower than the 4.5 cows per hectare in Washington and the 3.5 cows per hectare in Idaho; and it is drastically lower than the 7.8 cows per hectare in California. Further, unlike the rapidly increasing densities in the three states, the Fraser valley dairy farms have an average

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**Trade and Fossil Fuels**

Furthermore, an increase in trade with the US, and other countries like New Zealand, is more than likely to occur in the absence of supply management. In Vancouver, for example, with supply management a large percentage of the dairy products consumed in the city are produced locally in the Fraser Valley. Consequently, without supply management, the distance dairy products consumed in Vancouver would travel, between production and consumption, would substantially increase. This will increase the amount of fossil fuels used in producing and distributing dairy products and have a negative effect on the ecosystem through the increase in greenhouse gasses. Although this discussion is beyond the scope of this thesis, it is worthy of further discussion.
hectare per cow ratio that appears to be stable when compared with 1992 densities (Betrand, 1999 BCMAF, 2000).

The 2.3 cows per hectare density is under the recommended densities for the region. The BCMAFF estimates that South Coastal BC maximum animal densities, based on manure nitrogen content and crop nitrogen demand, should be between 2-2.5 dairy cow equivalents per hectare. Consequently, dairy farms on average have sufficient land. The BCMAF summarized, in terms of dairy farms in the Fraser Valley, that: 4% of dairies shipped all manure off farms; in total 5% of dairy manure was shipped off farm; 95% of manure was stored in structures that prevent leakage into underlying soil; more than 85% of dairy farms in the Fraser Valley have the capacity to adequately store manure and avoid spreading manure in Fall/Winter (when it is most likely to leach into water systems); on land adjacent to natural sources of water almost all farmers took proactive steps such as permanently vegetating, adding additional vegetation and livestock fencing to contain erosion and runoff. BCMAFF also concluded that more than 70% of manure is applied in spring and summer, which is positive.

Non-Supply Managed Agricultural Products in Canada Compared to Dairy

Furthermore, looking at other livestock densities in Canada also allows a comparison between supply managed and non-supply managed commodities. With poultry, a supply managed commodity, dairy cow equivalent densities were similar to dairy - whereas with hogs, a non-supply managed commodity, densities were about 4.9 dairy cow equivalents per hectare and according to BCMAF, hog farms in BC have insufficient land.

In conclusion, this comparison, between the Pacific Region and Idaho, and BC environmental records, suggests that supply management plays a role – by reducing viable herd size - in reducing the level of manure concentration on a given land base, which is intimately related to environmental health. Although the interviewees never directly discussed the density of cows on dairy farms and ecological health *six of the thirteen interviewees did express that without supply management dairy farms would most likely increase the amount of manure being shipped* (See Graph 6). This suggests that due to a higher cow per hectare ratio resulting from the deregulation of supply management, dairy farms would have more manure per hectare of land and consequently would have to ship more manure.

Looking at comparisons on size and density demonstrates that although the average dairy herd size in BC is increasing, supply management dampens the trend towards larger dairy operations and appears to be maintaining a constant density of dairy cows per hectare. Also, this may have enabled
government regulations and enforcement to change at a speed that is more consistent with the industry. This suggests that the financial stability that is accorded with supply management allows dairy farmers to maintain an ecologically sustainable cow-per-hectare density. Furthermore, even if the BC dairy industry did not mimic dairy production in the US, the increase in trade with regions like Washington, Idaho and California who are currently experiencing critical ecological issues implicates the consumers in BC with the ecological degradation in those regions. This is supported by some of the interviews conducted.

Three of the thirteen interviewees expressed the view that ecology would decline without supply management as a result of an increase in imports from regions with lower ecological standards (See Graph: 6).

B. Food Quality and Animal Welfare: BC versus the Pacific Region and Idaho

If the dairy industry were deregulated what would the effects be on food quality and animal welfare?

This section analyzes the potential food quality and animal welfare implications associated with an increase in herd size and density, to levels similar to dairy producers in the Pacific Region and Idaho in the US. It does so mainly by examining the somatic cell count (SCC) rates between the two countries - which is a major indicator of animal health and food quality.

SCC is an indicator of mastitis infection. The higher the SCC count, the higher the rate of udder infection in cows and the lower the quality of milk. There are many factors that are involved with a cow developing a mastitis infection. The use of BST increases a SCC count by approximately nineteen percent, because as cows are forced to produce more milk their bodies are more

Can Canada Ban Imports from Cows Treated with BST?

In the event of deregulation of supply management, could Canada ban dairy imports from animals treated with BST? In 1989, the EU placed a ban on meat imports from animals treated with growth-inducing hormones. The United States began dispute settlement proceedings in 1996 to have the EU import ban removed. The EU lost an initial WTO dispute settlement decision on the beef hormone import ban in 1997, and then lost an appeal in January 1998. The Panel concluded that the EU regulation was inconsistent with the SPS Agreement (Monnet, 2003).

However there is some evidence that a ban is possible. In 1999 governments attending the biennial Codex Alimentarius Commission - the main United Nations body that sets international food standards meeting in Rome failed to agree on an international standard on BST. The failure to agree means that governments now have much more freedom at the national level to decide whether to permit the use and import of BST in their countries. The adoption of a standard would have asserted that the hormone was safe to use, and countries refusing to import dairy products from countries where BST is used could be brought before the World Trade Organization on the grounds that they are creating a barrier to trade (Wolfson, 1999).

Currently, the Canadian government allows approximately five percent of its domestic consumption to be from imported dairy products, and seems to have no concern regarding the - albeit small - consumption of dairy products produced using BST. It is unclear whether the Canadian government, in the event of trade liberalization, would attempt to ban the import of dairy products from cows treated with BST.
susceptible to infection (Laningham, 1999). Other factors that are related to elevated SCC rate are poor ventilation and generally poor hygiene standards. The following is a list of generally agreed upon recommended mastitis control practices: washing and drying udders before milking; regular milking machine maintenance; teat dipping and dry cow treatment; culling cows with recurrent mastitis; clean and dry bedding; and good ventilation (Howard, 2001).

In California the average somatic cell count is 298,000 cells/ML, in Idaho it is 320,000 cells/ML and in Washington it is 275,000 cells/ML. In some states, such as Minnesota, it is well over 400,000 (Miller and Norman, 2001). In BC, it is substantially lower at 150,000 cells/ML (National Statistics, 2001). This suggests that both animal welfare and food quality is higher in BC compared with the Pacific Region and Idaho.

The potential gain in efficiency with BST does not come without a cost. It has been reported that cows injected with BST suffer reproductive problems, digestive disorders, foot and leg ailments, persistent body sores and lacerations and increased rates of mastitis or inflammation of the utter. BST cows receive four times the antibiotics for mastitis as untreated cows, with treatment lasting six times as long (Boyens, 1999. p.93). Furthermore, BST is not just an animal welfare issue. This increase in antibiotic use greatly increases the chances of antibiotic residue in the milk supply. 'The International Journal of Health Services' published a study that linked BST with breast, colon and prostate cancer (Cited in Boyens,1999. p.89). A study by The White House Management and Budget declared that one-third of American farmers will leave the dairy industry as a result of BST (Cited in Boyens, 1999. p.83).

BST is currently banned in Canada for animal welfare reasons and it is unlikely that even with trade liberalization the ban would be lifted. However, without supply management, BC dairy farmers would be competing with producers in the US that can enhance their production (in the short run) by up to 25% with the use of BST. As a result, it is possible that Canadian dairy farmers would lobby for the ban to be lifted. Three of the thirteen interviewees stated that there would be a lobby to remove the ban on BST if supply management is eliminated.

Although studies indicate that herd size is not necessarily correlated with mastitis infections there remain the possibility that herd density may be partly responsible for the elevated SCC rates in the US. According to Shepton Veterinary Group increasing density can negatively affect cow health. Over-stocking houses results in animal standing for longer periods than normal - which causes lameness, ulcer sores and strep uberis mastitis (Shep Vet Group, 2002).
Another factor that may play a role in increasing the rate of mastitis infections at US dairy operations is the tighter operating budget that they experience. This may force farms to ignore some of the recommended preventative mastitis control options.

With the increased competition that is expected to follow deregulation, farm management decisions such as cow density and degree of preventative mastitis control are likely to yield higher SCC levels - causing food quality and animal welfare to decline. The majority (ten of thirteen) of interviewees expressed that with a reduced profit margin, which would occur if supply management were eliminated, investment in the environment, animal welfare or food quality would decline (See Graph 4). One hundred percent of the interviewees indicated that food quality has the potential to decline with the absence of supply management (See Graph 8). However, one interviewee expressed the view that quality will not likely decline because standards will not change with deregulation (see Graph 8). Further, two of the interviewees expressed the view that deregulation would likely enhance animal welfare because the resultant improvement in technology would represent a positive influence on animal welfare.

Specifically, in terms of animal welfare and food quality, the higher the cell count the greater the risk of raw milk contamination with pathogens and antibiotic residues. Increased SCC is also associated with reduced suitability of the raw milk for manufacturing and processing into products for human consumption. Research has shown conclusively that elevated SCC (above 200,000) has had significant negative impact on the udder (Jones, 2000).

Herds with high SCC seem to have a greater problem with drug residue violations, regardless of whether their SCC exceeds 750,000 (maximum in the US) or 500,000 (maximum in Canada). Herds with low SCC had lower bacteria counts, fewer problems with freezing point infractions, higher fat tests, and drug residue violations (Jones, 2000).

It is well documented that the higher the SCC, the greater the risk of raw milk contamination, not only with antibiotic residues, but also with disease-causing bacteria or pathogens. Pasteurization kills many pathogens that may cause public health hazards but it provides no protection when cheeses are made from raw milk, nor does it remove enterotoxins that are produced by Staphylococcus aureus, one of the more prevalent causes of mastitis infections in herds with SCC above 400,000. Furthermore, pasteurization doesn’t remove drug residues (Jones, 2000).

Cull rates are also substantially lower in Canada compared to the US. Cull rate is the percentage of a herd that is killed every year. High cull rates are associated with the use of BST and high SCC rates.
It has also been argued that the downward pressure on milk prices encourages heavier culling (Gauthier, 1998). In the US, according to the Dairy Records Management Process, average cull rates in dairy herds over 600 head are about 39% and the average rates for herds under 100 cows are approximately 37% (Whitmore, 2002). In Canada the average is 20% (MacKay, 1995).

In conclusion, without supply management, dairy farmers - responding to an increased level of competition - are likely to increase cow density; lower the degree of preventative mastitis control and increase cull rates. If these trends emerge in BC, like in the Pacific Region and Idaho, food quality and animal welfare will decline.

Even if production styles and techniques in BC, related to animal welfare and food quality did not mimic the US trends (such as: higher SCC; higher cull rates), there is a high probability that there would be an increase in US dairy imports in BC. Consequently, the quality of dairy products consumed in the province would still decline due to the use of BST and the higher SCC rates in these regions. *Seven of the thirteen interviewees communicated that the food consumed in the province would decline with the deregulation of supply management.* Similarly, dairy consumers would be (further) linked into a food system that is characterized by lower levels of animal welfare than in Canada.

**Conclusion**

In summary, I found that the dairy industry in Idaho and the Pacific region in the US (which is not governed by supply management) compared to the dairy industry in the Fraser Valley, BC, had a reduced level of ecological sustainability, when looking at issues such as waste management, animal welfare and food quality. This supports the premise that supply management encourages sustainability by providing a level of financial stability that enables farmers to plan for more than just short-term economic stability but rather long term economic and ecologic health. Alternatively, these finding support the proposition that non supply managed dairy industries produce greater environmental degradation because farmers seek to counteract declining revenues by using the biophysical environment as a resource bank and by paying less attention to farm-level environmental stewardship in order to reduce short term costs.
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The dairy industry is an extremely complex agriculture sector, and the connections between supply management in the dairy sector and sustainability are not always straightforward. Consequently, through a Grounded Theory methodological approach, I explored socio-economic and ecological costs and benefits that are likely to occur, in the Fraser Valley, BC, as a result of the elimination of supply management. Although dairy farming trends in Canada and BC continue towards a smaller number of larger farms, it does appear that supply management has to some degree slowed this trend – stopping extremely large, dense farms from developing. The fact that this trend continues illustrates that supply management is not a comprehensive solution to sustainability challenges but rather one possible approach among many. Through this study, several links between sustainability and supply management were identified (See Table: 4). This was a timely investigation due to the current international debate surrounding supply management and efficiency, and escalating concerns related to globalization and sustainability.
TABLE 4: Deregulation of Supply Management in the Dairy Industry: Summary of Potential Socio-Economic and Ecological Costs and Benefits in the Fraser Valley, BC

- Likely effects due to the deregulation of supply management
  - Loss of Market Power by Dairy Producers
    - Fluctuating farm-gate prices and tighter profit margins
    - Increase in Niche Production – Organic and Non-Organic
      - Possible increase in GDP
    - Fewer farm owners more farm labourers
    - Investment in local economy less likely
    - Farm labourer wages may decline
  - Decrease in large dense farms - as in the US - to capture economies of scale necessary to ride out lows and survive lower profit margins
  - Increase risk of surface and ground water contamination
  - Possible lobby to remove ban on BST
    - Less likely to invest in activities like ecological stewardship, animal welfare, and food quality - to reduce short term costs
    - Increase in fossil fuel usage and greenhouse gas emissions
    - Larger amount of dairy products consumed in BC that are produced with animals injected with BST
  - Increase in tight farmer profit margins
  - Transfer of wealth from farming sector to other, more economically powerful, levels of the food system
  - Consumer prices levels are to remain unaffected
  - Probable negative economic spin-offs

- Increase trade with US, New Zealand, Australia etc.

KEY
Likely structural changes in the industry from deregulation of supply management
Likely ecological costs and benefits from deregulation of supply management
Likely socio-economic costs and benefits from the deregulation of supply management
Academic economists and others such as the Cairns Group argue that as a result of the supply management, Canadian dairy producers are neither efficient nor outward looking and the system represents a massive transfer of wealth from Canadian consumers to dairy producers. However, others claim that when analyses are done including all links in the food system, supply management represents a financial transfer from the more powerful levels of the food system, such as retailers and producers – levelling the playing field.

This debate mainly focuses on the competitiveness of the Canadian dairy industry relative to the United States, and a central question in the discussion is: Will the supply management system allow the Canadian farm structure to grow as quickly, as in the US, to obtain and maintain a competitive position internationally? However, if Canada and British Columbia want to pursue a variety of objectives such as social, economic, intergenerational equity and ecological integrity, it is imperative that the dialog should reach beyond a quantitative economic growth framework to include qualitative and multiple complex goals. In other words: the ecological and socio-economic costs and benefits of deregulation also need to be identified. In this exploratory evaluation I have identified and analyzed those connections.

In summary, I propose that the food system can only be understood in terms of the different power relations between its various sections – farmers, processors, retailers etc. The consolidated control of large conglomerates in the food system is diluting the power of both consumers and farmers. The vertical, horizontal and global integration of the food retail sector has rapidly increased in the last decade. Dairy farming, due to the supply management system, has been less affected by these national and international trends than other farming sectors. The collective rights that supply management accords dairy farmers counterbalances the strong market power at the other levels of the food system; and unlike farmers who are subject to the fluctuating world market, dairy farmers enjoy price stability that helps stabilize incomes. Without supply management, BC dairy producers would be competing in a more competitive market and would have to adjust the structure of their farm accordingly. This would most likely translate into larger, more dense farms (higher numbers of cows per hectare).

With the loss of supply management and the consequent loss of a means to compensate market power at other levels of the food system, the distribution of wealth would shift from individual farmers to financially powerful retailers and possibly processors. An increase in the number of large US style farms in the Fraser Valley would negatively affect socio-economic equity by decreasing local
economic spin-offs. In the event that the structure of the BC dairy industry was dominated by larger - rather than medium and smaller sized - farms, control of local resources would transfer into a fewer number of hands. It is also possible that farm labourer incomes would decline due to tighter profit margins. Additionally, a transition to larger farms shifts the industry away from perfect competition and consequently away from effectively operating markets.

The elimination or phasing out of supply management would result in changes to the structure of dairy production in the province such as: larger farms with a higher cow per hectare ratio. This would further exacerbate the current problems related to nutrient overloading and water pollution that already exist in a number of regions in the Fraser Valley. It is also likely, due to the increase in animal density, that the quality of BC dairy products would decline - and, with the subsequent rise in Somatic Cell Count rates, animal welfare considerations would also be lowered. All of this suggests that the removal of supply management would result in greater environmental degradation as farmers seek to counteract declining revenues by increasing production and ignoring longer-term goals such as ecological health. In summary, deregulation’s resultant impact on planning horizons can be expected to increase farmer insecurity and reinforce exploitation of the biophysical environment.

Whether or not there would be a rise in GDP from deregulation and trade liberalization – which depends on the Canadian dollar exchange rate staying low or declining relative to the US – there would be costs in terms of well-being. These costs such as: a decline in ecological health; lowered food quality and animal welfare; and secondary economic effects such as local divestment, are not included in conventional analysis.

Further, even in the event that the structure of the Canadian industry did not mimic US trends, the elimination of supply management would increase the consumption of US dairy products in BC – especially if the Canadian dollar increased. As a result, consumers would be consuming dairy products at the expense of ecological health, animal welfare and socio-economic equity in the US.

When legislation was passed, in 1956, to treat the dairy industry as a public utility and to be closely safeguarded in the public interest, little was known about the future scale of dairy farming and the potential ecological degradation that is possible with modern dairy farms. Consequently, the main concerns were regarding economic viability and social equity. These concerns are still very relevant today; however, ecological health is also fundamentally imperative to maintain.
Analyzing supply management from a Community Food System perspective has allowed many of the non-qualitative and indirect benefits of supply management to be documented. Koc et al. in *For Hunger-Proof Cities: Sustainable Urban Food Systems* (1999) argue that a local or Community Food System enhances ecological and socio-economic sustainability:

"... by linking the productive activities in the surrounding bioregion to the consumers in the metropolitan centers, local food systems can reduce greenhouse gasses and other pollutants caused by long distance transportation and storage. They can reduce vulnerability of food-supply systems to the impacts of weather and market related supply problems of distant producers, provide fresher and more nutritious products ... allow for more effective regional control of quality and chemical inputs, and create the potential for local development and employment opportunities" (Koc et al p.5, 1999).

The Canadian supply management system contributes to ecological and socio-economic sustainability through the same chains and, consequently, has the potential to be intimately linked to local initiatives focusing on Community Food Systems. While supply management does not explicitly target values like community or ecological health, it does create space for these values to be potentially incorporated into farm management decisions. Embedded in a Community Food System, supply management has the potential to help localize a food system and tighten the link between producer and consumer. This, in turn, helps: create an environment where producers and consumers interact, sharing knowledge about the local ecosystem and how food is produced; maintain the economic viability of local farmers; support the local economy through spin-off industries; and decrease the distance food travels which reduces greenhouse gas emissions... etc. These activities decrease the likelihood of externalized ecological and social costs.

Supply management as part of a Community Food System can assist the production and distribution of agricultural commodities to remain within confines of the ecosphere because long-run economic decisions have a greater chance to be consistent with ecological principles. Hence it is not surprising that given the financial stability accorded by supply management, that BC dairy farmers have experienced less ecological degradation than their US counterparts. Environmentally sustainable activities such as low SCC rates, lower cull rates and good manure management systems enhance economic viability in the long-term.

Additionally, the loss of supply management - in the current global trading environment - would result in a loss of domestic control over local resources through a transfer of power from dairy farmers to international, and uncontrollable, forces. Not only would an unregulated market, in the context of the dairy industry, result in a loss of financial control for producers - and higher prices for consumers - but it would shift public interest decisions such as animal welfare, food quality and
ecological sustainability to an international level. This transfer of power represents a shift away from democratic values because, as a result, unelected WTO panels and representatives then determine both what is in the public interest and what sort of regulations are necessary to protect those interests.

Furthermore, supply management used as a tool in a Community Food System has the potential to help bring healthy, locally produced food to all sectors of society. Supply management is a policy that applies to all producers of a given commodity. If all producers allotted quota are afforded the financial stability to produce organically, and imports only represent a small portion of domestic consumption, then the vast majority of Canadian citizens - not just an affluent minority - will have increased access to high quality food. Although this represents a long-term scenario, I feel it is one worthy of further investigation.

Given that "the warm winds of trade liberalization are gathering speed, and the dairy industry in Canada ... will not be able to lean up against this wind indefinitely" (Meilke, et al., 1998), all Canadians should be wary of what this may bring. Until the ecological and socio-economic costs and benefits of deregulating supply management are adequately examined, Canada should not commit to a slow abandonment of the system as appears to be happening now.

If we are truly interested in elevating societies' well-being, and mitigating global ecological disaster, dairy production - as with many other industries - must be encouraged to incorporate qualitative and local values into their decision making processes. Supply management, acting with a diversity of other initiatives, has the potential to help address some of these ecological and socio-economic concerns.

**Recommendations and Future Research:**

A) This evaluation would be greatly enhanced if the pool of interviewees were expanded to include other sectors of the dairy industry such as the processing and retail sector. Including input from stakeholders in the US would also help to inform the study.

B) To enrich this discussion research could focus on a more in-depth examination of similar scenarios in other countries, such as Australia and the UK. Also, investigating case studies relating to other commodities and the deregulation of supply management would be advantageous.
C) Further research is needed to supplement the initial linkages between sustainability and supply management explored in this thesis. This is especially so because very few negative qualitative attributes of supply management, surfaced in this exploratory investigation.

D) Further linkages between Community Food System advocates and supply management supporters would benefit both public interest and each group.

E) Before any further changes are made to the supply management system, the connections between the system and sustainability should be further investigated using criteria that reach beyond a quantitative economic growth dimension.


The Rural Coalition. (No Date). *Brief Background and History of the US Farm Bill: 1949 to Present - the Rural Coalition.* Retrieved March 31, 2003 from the Rural Coalition Web Site: http://www.ruralco.org/html2/content/Farm%20Bill%20History.doc


APPENDIX A: INTERVIEW QUESTIONS

Section 1

1). In your opinion:
   a). What are the objectives of supply management?
   b). What effect does supply management have on farm income?
   c). What role does supply management have in maintaining, or not maintaining, family farms?

2). If, for example, B.C. dairy farmers had to take the market price (farm-gate) for dairy products:
   a). How would this affect the market for dairy products in B.C.?
   b). How would this affect the production of dairy products in B.C.?
   c). How would this affect the structure of the industry in B.C.?
   d). What size/ type of farm would be competitive?

3). If dairy were deregulated, from what geographic region(s) would the competition come from?

4).
   a). In your opinion could a typical 100 cow B.C. dairy farm compete with the U.S., New Zealand and Australian imports in a deregulated dairy market?
      If yes – what is B.C.’s competitive advantage?
   b). If no – why not?
   c). If no, what management and structural changes would have to occur at the farm level to make the B.C. industry competitive?

5). If the dairy industry were to deregulated would changes positively or negatively effect:
   i). Farmers/ farm families
   ii). Farm communities
   iii). The industry
   iv). The environment

6). Do you participate in any voluntary environmental programs?
   If Yes – would you continue if your farm were forced to compete in the market? In your opinion would dairy farmers in general be less likely to participate in voluntary programs?

7). What effect would deregulation of dairy have on:
   i). Quality of dairy products in B.C.?
   ii). Price of dairy products on B.C.?

8). How do you think consumers would respond if the dairy industry were to be deregulated?
Section 2

1). What social/cultural values are represented by supply management in dairy?
2). What social/cultural values are represented by deregulation in dairy?
3). On the whole, do you think the changes from supply management to open market would have a positive or negative outcome on the industry, community and/or environment?
Category 1: The cost of Dairy Farming: Thirteen Interviewees’ Perceptions Regarding the Economic Advantages of Dairy farming in the US Compared to Canada

1 - [talking about BST being a production advantage] Yes a short-term advantage. .... In New Zealand climate is a huge advantage.

1 - [talking about why other countries can survive receiving lower farm-gate prices] Mostly on the scale. For example, in Washington they are milking 300-400 cows they have put money into infrastructure.

1 - Canada is a great place to do business. We have a weak dollar and that gives us a lot of advantage in world market. We have a great reputation with healthy products. We have the Hassip. I don't any country in the world with a high health standard.

2 - Right now farmers don't care about BST but there would be a big push to get it up here [without supply management].

2 - New Zealand can do it cheaper because of grazing. In the states they can do it cheap because of economies of scale and they get a lot of subsidies.

3 - [What role does SM have in maintaining the family farm?] Yes it plays a role b/c in the free market, where there is instability, like the US, it creates opportunities for larger business producers more business orientated market to take advantage– when there is low price the small farms have less access. The larger farms have more opportunities and access to money to expand when they feel the opportunity.

3 - BST banned is in Canada but we import milk from US that has been produced using it. We import up to 5% of consumption. And it is giving a competitive advantage to those producers. You have to be careful. Even if we have access to different technology on the farm. Some countries say we want to give our farmers what ever advantage we can, any technology that comes to the market we will let them use it. But in Canada our farmers are quite cautious as to quality.

3 - Economies of scale [give the US a cost of production advantage] – they [the US] are ahead of us in terms of consolidation Arizona. 1000 cow over 700 in California. We are probably 10 years behind or better. They have had a chance to build the infrastructure.

3 - [Is there a difference in terms of animal welfare or infrastructure in the smaller vs. larger farms?] Not a huge difference. If the cow isn't treated right it won't produce so good, so those who aren't doing a good job won't survive. Because the bigger dairies have the resources they can adapt to new technology like stall design and cow comfort. Smaller farms can't afford to adapt to changes. Because of production benefits.

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21 Interviewees were assigned a number between 1 and 13.
3 - ... but there labour cost will be lower [in the US]. In the US they use a lot of Mexican labour legal or illegal. I've travelled down the coast and in California they predominately use Mexican labour. [Labour in the US amounts to] about half it costs here. Even in Washington.

3 – [What makes world farm-gate price lower than BC's price?] In New Zealand they have a unique situation because they can graze and [they have] no costs in terms of infrastructure. In the US it's more the larger farms that can survive at those prices. There is discrepancy in terms of US price vs. world. Remember they are getting subsidized [in the US], direct payments and the recent farm bill.

4 – [With] deregulation in the BC dairy farms, they wouldn't be competitive. We would see a lot of milk coming from the states because they have economy of scale. If it was done gradually we would lose quota and get bigger farms. It was done tomorrow they wouldn't be competitive [small-medium dairy farms]. Big ones would prevail. Even in slow implementation. The cost of production is quite lower with the bigger farms, because you are buying in really big amounts. By giving higher price of milk compensates for higher of cost of production.

4 – [Is there a difference in milk quality between the US, Canada, New Zealand?] In Canada we have one of the highest quality in the world you can only go down. BST is not allowed in Canada.

5 – [Would we be competitive with the US?] With our dollar right now we wouldn't see a lot of US dairy moving in [without supply management]. If our dollar changed you may see more coming in but a lot of inputs are priced internationally. Feed is not a Canadian business – you have to compete with US with feed and supplies. In the current market Canada might do all right. We would concentrate in areas of economic efficiency and do pretty well like we have done in beef and hogs.

5 – [What would the effects of deregulation be?] You would see a by polar industry - a lot of larger farms trying to take advantage of economies of scale and size in term of production and also a niche market like more very small boutique or specialty production, not necessarily organic. Because a lot of large dairies would go to organic as well and we would see a lot of industrialization in the organic industry like in the US and I think we would see that here too. [You would see more] specialized product in terms of animal welfare, [like] the pasture based system on Vancouver island.

7 – [Why are New Zealand, Australia production costs lower?] Just because they are grazing doesn't say you don't have to pay for feed. Number one, you don't have to house the animals. That is going to be a significant cost saving. They don't feed the grain we do its not available to them. You take the capital expense of buildings [here]. That would be one large [expense for BC producers compared with New Zealand].

6 – [What are the differences between the average BC farm and farms in California or the US?] Most of these farms do not grow their own forage. It's all purchased so that manures got to go somewhere. If no land they buy close by... That is what has caused the problems for example in the Cheeno Valley in California.

6 – [What about labour differences between BC and the US?] There is a lot of migrant labour in the states. Their labour cost are less. This one time this fella was talking about mastitis management. And he said "in the US it's very easy - if you have a problem with the herd you make an anonymous call to immigration department say a bunch of illegal workers on the farm – so the immigration dept. comes in and cleans out the whole labour force on the farm and then you replace the whole new bunch and then you retrain". And that was their management system for dealing with labour.

6 - We get 58 – 60 dollars per hectolitre. If you get less than that you’re not profitable. That’s your COP. In the states – their feed costs are lower in certain areas due to climate conditions their capital costs are going to be less in certain areas because of climate. Like Arizonian they would just need to build a shade structure you don't have to spend a lot of money on buildings.

6 - In other countries that don't have supply management (SM) like the US there are so many government programs that supplement the income of the producer. So we can be competitive if we have a level playing field but if we don't have SM and don't get anything else in return then I guess we couldn't be competitive.
7 – [Are there quality differences between Canada and the US or New Zealand? Or what would happen to the quality of dairy consumed in Vancouver without supply management?]
Quality would be lower simply because the standards are lower in many of the US jurisdictions.

7 - In terms of COP, large amounts of contaminated milk is shipped to the US/ Canadian boarder to dump the products with antibiotic contamination. Cheaper in the states because climate, infrastructure. Dairy products are cheaper in Blain than Seattle, cheaper along the Canadian boarder.

7 - In the US where they just have to build sun shelters. It’s not so bad because your capital outlay isn’t so critical.

7 - Larger dairies have some advantage because of the sheer size. The COP could be lower than smaller. Because of the of the huge concentration.

7 – [Are the COP lower in the US?]
I’m not sure if it is lower but in the US they have a massive subsidy program. Under the new bill and with that individual states have programs. This safety net really muddles the water. We lost the last subsidy February this year. In some areas of the states the COP maybe lower because taxation may be lower or labour may be lower feed costs to some extent. Although the climate is milder than here in Canada but certainly there are areas there that the COP is somewhat lower but they are always squeezed because of subsidies and the US government will by up any surplus at a certain price.

7 - In the US with a deregulated market it’s a cost struggle, the framers can’t maintain the size they need to be to earn a reasonable living and simply go out of business.

7 - Some the counties and states that want to attract producers because they need the employment they give tax incentives and in Canada you simply can’t do that.

7 - In California they can do eight crops. The eastern US is the same as eastern Canada depending. The big thing that we are seeing is water. Availability of potable water for water for use with dairies and what we do with are waste.

7 - The government can’t maintain ban on BST because how can tell a processor that they can’t use milk with BST in it when they have opened the boarders, there would be a riot. You are just cutting way your own standards.

8 - You go to New Zealand they don’t even wipe the shit of the cows so all that stuff is in the milk because they can’t afford it. They are producing volumes of milk low cost, no infrastructure. They are standing in rain in conditions in Canada you would be put in jail for. Same in the US look at California they have outdoor paddocks and they have no cover from the rain. They lying there dying. In Canada you would be put in jail.

8 - The US system today, they have a guarantee price for roughly 16.94 Boston price for fluid milk. A Safety-net for anyone under 130 head. If you are over it doesn’t apply.

8 - Its not welcome by the producers, it would be a last resort. It is an economic position like equity they will use it because they are forced to use it. Cattle is looked after you should have not to require the use of BST.

8 – [Do these areas have a competitive advantage over BC?]
No, in the lower mainland or Vancouver Island. The lower mainland is unique, 5 crops a year. Land prices here a lot high than anywhere else.

8 – [What effects would deregulation have on the ecosystem?]
You won’t see 30 cows on 40 acres. It will bring in efficiencies of scale to an extreme –

9 – [Are COP lower in the US?]
A number a things but the main thing is the larger farms. There are other things. You can’t help but think, and I don’t have any data to verify this but with being more unpredictable and lower returns you have to question whether all the investments that should be are being made.
9 - [If the industry deregulated would BC producers remain competitive?]
There are a whole lot of factors beyond the industries control. For example, you have exchange rate. Right now with the low Canadian dollar the impacts might not be that great. [Without supply management there would be a] very very high level of unpredictability.

9 - [Here in BC with supply management] it doesn't go to the point that the margins are so low that the industry is pushed into these absolutely huge operations, like herds in the 1000s. The reason this happens in the US is that the returns are relatively low, they fluctuate and they are unpredictable. If you have a very large herd your margin is low but you are still going to make some money because it takes way more milk to turn a profit with such a low margin.

10 - In California they had a freeze in some areas but you are talking 2-3000 cows on 80 acres. All the feed is brought in. the whole acreage is buildings or corrals and a little lawn. All concrete or walking area. All the manure has to be trucked away or separated. It's a different business, a different way of farming.

10 - [What are the management differences between these large farms and the typical BC farm?]
In BC all dairymen we all have land. Some more than others and we all grow crops that we utilize through our feeding programs. In CA or Idaho they strictly know cows. They don't crop any, they buy all the feeds be it grain, hay, silage. It all gets trucked in.

10 - I have a friend [here in BC who grew onions] ...the problem is that he had to compete with those onions in the store [from other countries]. ... But because you have different licensing bodies and they do their own research and make their own decisions and their own lobby groups...[sometimes you have] pharmaceuticals companies that produce stuff that is taken off the market in Canada and then sold in 'developing' countries who then export it back to Canada.

10 - The US is very protectionist, why? Their dollar. Its so strong they have sort of put their selves in a corner so they become protectionist. You can either block the doors or you can subsidise. Our costs are higher than the US because a lot of our equipment comes from the US so that drives up our costs, with the weak Canadian dollar.

10 - We are competing with that, along with people who want to live in the country with a country setting who don't want you spreading manure or [who argue that] you should only be spreading between certain hours, like in the city you can't swing a hammer after a certain hour. From that stand point and when you have our environmental pressures and I think those things will carry on and I think rightfully so I have no problem with them.

10 - ....drugs, herbicides, pesticides -- there are different licences in different countries. The Canadian grape grower can't use something that is used in Chile. But those Chilean grapes can come into Canada and compete with Canadian grapes. This is exactly the case with BST. Milk that has BST can come into Canada.

10 - Getting back to farming here in the valley. One of our bigger pressures is the cost of land. Various aspects, population, the best land in the province people go and live on.
We can hardly justify paying those land values for forage production. We would be better off getting on the phone, forget about having your own land, and order a load of hay we would have less headache , it would be cheaper because it cost me so much to own the land it costs me so much in equipment, I have the weather factors, risks.

11 - If your profitability per cow is diminished [as would happen without SM] you want to maximize production per cow and one way to do that in the states is to use BST which creates a whole other list of concerns.

11 - If we are deregulated look at the US. One item would be over crowding of the barn - you want to maximize number of animals per square foot of barn. Then you may have up to 50% more cows in the stalls.
11 - [People argue] that the dairy industry is getting 1.3 million from the government. But we don't get any subsidies. The US let on that they don't get subsidies.

12 - We get annoyed because [the public] they want to live somewhere but they want green space and they expect us to provide it and currently we are providing all those benefits at our expense.

12 - They have a lot of Mexican labour on the farms down there [in the US]. The Mexican's kind of like dairy they like the irregular schedule they get minimum wage. We actually have a lot of skilled-peopled working for us.

12 - With the larger farms here. They are milking the cows on one site because the milking system gets better use of labour and eventually you start moving feed and manure on wheels

12 - [In the US do larger dairies still grow feed?] Well, they get larger and more specialized.

12 - BST is very cost effective in the short-run

12 - New Zealand for example has a population of 3 million and I think 90% of the [dairy] production is export. What is the advantage of Australia or New Zealand. Well it's an extremely attractive conducive climate for dairy production. They virtually grow grass there for 11 months of the year depending where you are. So cows pasture. The COP is extremely low. You basically milk the cows and through them on grass. I have never visited but just what I have read. It will be just a price issue. I think the US is the bigger threat. The reason for this is b/c despite all the rederik about free trade or freer trade the bush administration, again, has just demonstrated very clearly that they don't want to talk so they will be protectionist to some extent. A powerful nation like the US has the ability to just say ya or nay.

12 - The social policies are the scary ones [in the US]. Like taxation for example or irrigation. In the US they have extensive concrete rivers for irrigation. Well the country has paid for that system. And what the farmer actually pays for the use of that water is just a fraction of the cost of that system.

13 - Right now in the states they aren't getting any money for their milk and look how they operate. They cut everything they don’t do anything extra. Feed for example – they will use all their own feed. They won’t buy feed b/c it’s a cash flow you lay out. And you will get seasonal things. They will be forced to cut labour. You probably won’t put as much into cow health issues. If there is any money that sick cow might be out the door faster.

13 - SM says we have to fix that cow b/c we have to ship the milk. There is quite a difference. With the cash-flow is that good or bad – long term its probably not great. You will just be dumping inventory when there is no cash, because all these things tie up cash the power of cash and if the milk price is down you get rid of all those things. And that is the typical US style farm.

13 - I think the US cost of production (COP) is farley comparable. They are not better dairymen than we are up here they are larger so there are some economies of scale. But to say that they are better at it. Feed costs are feed costs. They might have some labour issues, that are cheaper. Then what we do here. Then it means we would have to change our style here. Her we pay so that people can make a living and have a family and live and that’s how we pay our staff. But if we got into their style we would have to look at minimum wage kind of people and more turn-over. ... We would have no choice but to get down to US farm-gate price but the processor can do it cheaper because of his labour and his plant is cheaper. All the taxes are cheaper.

13 - The hard part would be that they can use BST. It’s hard to compete with someone that gets a 15% increase. Labour would be a big issue. You would have to look at running their farm on a strictly cash flow basis.

13 - You’ll see more people dealing with dairy specializing and that. It would be a big change. Our farm would have to be serious about our labour costs. We go down and see a lot of farms in the states. So I know what they pay people. We would have to cut back to that. We would have to give up quality. Give up certain things to get to that. [There is] a lot of migrant labour, in eastern Washington. The farmers don’t ask any questions.

1- [If we were to deregulate where would the competition come from?]
   For sure in the US, it is more expensive to produce and farmers get high price because people want fresh. People aren’t going to buy much milk from Wisconsin. We would have to match whatever the market price was. In the US they have real lows and real highs. We would have to prove that we are doing the same as they are. We would have to have larger farms but at the end of the day we would keep 90 percent of the business. We wouldn’t lose like 50% or anything like that.

2 – [Where would competition come from?]
   The states fights to keep New Zealand out they are the enemy. Butter and cheese. What about fluid milk – stay locally. In the US they want to fence off the ditches they call the government and they do it.

3 – [Where competition come from?]
   The US west coast, Idaho is growing market, maybe Oregan.

3 – [What about eastern Canada?]
   No, its limited ... Definitely the US [for fluid] and manufactured milk - new Zealand. A smaller producer in our current market is under 50. In an open market 200 is small.

4 – [Where would the competition come from?]
   New Zealand possibly Australia. They are already exporting butter to Canada. But basically the US.

5 - I don’t have a comprehensive analysis but some of the return over feed would be greater in Sask. and Alberta - implying one would expect that without SM more growth would have occurred there. We brought a brutch in here b/c our concentration of distribution, procession and handling.

5 – [Would we be competitive with the US?]
   With our dollar right now we wouldn’t see a lot of US dairy moving in. If our dollar changed you may see more coming in but a lot of inputs are priced internationally.

6 – [Where would the competition come from if the industry deregulated?]
   I assume with deregulation the boarder controls would come down. So the competition would be from the states. Competition from Alberta already exists. The regulated system is national. And trade between provinces exists. It would come from California, New Zealand, Australia. It would come from every where.

7 – [If we deregulated where would the competition come from?]
   The US no doubt – geographically. Western seaboard. ... Some competition would come from Alberta. Climate isn’t always in their favour. They can have a lower COP than the eastern Canada.

8 – [If the industry were deregulated where would the competition come from?]
   Not so much Washington state because there is a general exodus out of Washington. It would be more Idaho general area. California, Oregon. WA is losing ground. Because of environmental regulation.

9 - But you look at BC and where dairy production is. There are certainly regions that would be close enough to the main market, I mean the US. For example certainly right across the boarder Whatcom County, beyond that all the northern western states. There is significant dairy production from those regions. Its not going to be a given, but there is going to be a very high level of unpredictability. The whole point of the SM system it gives purchasers [producers] the stability to reinvest in their operations in the long run.

10 – [Where would the competition come from?]
   For fresh milk it would be the US, b/c cost of transport and expiry date. Other processed products like cheese, butter, ( ice-cream doesn’t travel that well). Some of that could come from New Zealand or Europe. Fresh milk – Washington is being squeezed out. Idaho has had some major expansions. Eastern Washington to some extent. Idaho has had major expansions like dairies around 5000 cows b/c of land availability.
11 – [What would happen with deregulation to the dairy industry in BC?]
A lot of the smaller operations would be wiped out and having the US Washington a sizable dairy just literally down the road, they could flood this area over night.

12 – [Where would the competition come from?]
Washington, no question. Talking BC - Washington, Idaho Oregon, California not a big difference. Look at the transportation networks and the roads. Idaho is really growing and expanding b/c the state has a lot of incentives to get dairy farmers to go there. A lot of California dairy farmers are going there. It’s really developing. In terms of miles and the road system – that’s what you have to look at. In terms of California is totally not out of the question you get what percent of our vegetables from California it just flat 2 lane highway. A truck from San Francisco or LA is probably 20 hours not a big deal.

In terms of non-fluid dairy competition - we will be targeted by the US market. Take cheese for example, you are taking fluid milk and condensing it at a ratio of 1:10 so you take like a hundred kilograms milk it will make ten kilograms of cheese. So it’s just a price issue a fright issue anywhere form the US isn’t going to be a huge thing. You are looking at the same thing. If you are going to look at if the production is here what’s the different between western US and eastern US its freight. Well not much else is different. Obviously cheaper. not likely Europe. Australia and New Zealand are always a concern. New Zealand for example has a population of 3 million and I think 90% of the production is export.

12 - And then if we talk about Canada our biggest concern or threat under deregulation would be the US. B/c the US’s ability to put the dairy farmer out could be extremely swift. Their surplus production, at times, has been enough to feed the Canadian population for a year. I've been the dairy business for 25 years. They are 10 times bigger than we are. To feed Canada - if every dairy farmer shut down immediately that would require a 10% increase in production of the US farmers. That isn't very significant. Farmers can respond to a 10% in production fairly quickly.

13 - [After deregulation where would the majority of dairy in Vancouver’s market come from?] There is really no reason for it to come from there [the US] unless our price is higher. So if we deregulated then we have to compete with the US Price. If it doesn’t become a dumping issue where they have extra product they are trying to get rid of. Then there is no reason for it to come from the States. The issue would be if the processor shut down plants in Vancouver and had a plant in Seattle instead and brings up dairy from there. When you get into products like cheese you can haul from wherever. That could be more of a concern. B/c the major processors in Canada are also in the US. The ones that own plants in Vancouver now got plants in the US. The price of the farm-gate. There is no reason for the milk to come from the states but now you get into - is it cheaper to process milk in the US and is labour cheaper and all. And that could be a factor that has nothing to do with what we get for it. And that would be another reason why it would come from there.

13 - I think you would see US style farming [without supply management]. We look at good and bad times in the states. And we look at our operating costs and what they get for the milk. When their times are good they are making as much as we do but they don't have a quota debt to service. Would we compete with them? I think in the Fraser valley you would compete with them because we have a market in this area. If you are farming up Prince George or Fort St. John I would question.

Category 4 – Thirteen Interviewees’ Perceptions Regarding: dairy farming and the Effects of a Reduced Profit Margin That Would Accompany The Elimination of Supply Management

1 – [In terms of farmers involved in voluntary programs would that change with deregulation?]
No doubt – somewhat true in the short-run people would find themselves increasing cows and the time to get that all going takes a lot of management but after that initial stage they would find themselves as managers and have time to involve in committees.

2 – [What are structural effects i.e. manure disposal would change without SM?]
Ya, with a lot of the big farms their manure disposal is a croc. They put too much on. It's a good living [dairy farming] we aren't rich. But I bought this house cheaper than I could have bought one in town. The way its set up now you can afford to do things properly.

3 – [What are the most important ecological issues facing the dairy industry in the Fraser Valley?] Protection of fish bearing streams. There is a problem with poor communication between ministry of environment and dairy farmers. We have committees that are trying to negotiate. Farmers don't have a clear understanding of the guidelines. In the US the guidelines are very clear. It is equally easy for small and large farmers to deal with these issues in our current environment. If it were to deregulate the smaller farms might have a limited cash to deal with these issues and large farmers would have more human or capital resources to deal with it.

3 – [Do you participate in any volunteer ecological programs?] Through the city we planted some trees on a creek we have, for erosion prevention. With deregulation we ... If you don't have the resources if you are fighting to make a decent living it's a farm to farm thing. If it made sense we would want to participate. If a farm is barley surviving chances are the higher priority is just making a decent living. It depends on personal philosophy.

3 – [Would the 100 cow dairy survive?] I can't answer that, it might survive. Its not a business that would flourish or grow. It may be one of these two-generation farms where they make a living today. By the next generation it wouldn't survive. They would be living off the assets of the farm. It would have a limed life span. Especially if it has to support more than one family, which is typically what happens when you have a transfer from the first generation to the second. You need enough revenue because the margins are so small.

5 - [Would farmer's be less or more likely to participate in environmental voluntary programs if the industry were to deregulate?] The ones that feel the economic pressure would be less inclined. The more socially mined ones who have the cash would.

6 - Washington a couple of years ago had a problem. They lost the ability to transport their milk out of the region because of a problem they had in their dairy herds. And I think it is directly related to the profitability of the industry. If you want to maintain a quality and safe product, the worst thing you can do is make it so difficult for the producer so that he has to cut corners where ever he can to survive and cut corners where he shouldn't be.

6 – [Talking about problems in the UK] They got a problem and why do you get a problem. Well you are trying to cut corners. This stuff they were getting from these restaurants wasn't properly processed. There was a system in place where it was approved to use this stuff as animal feed. But the procedures weren't being followed because it costs money. And if there is no profitability in the business then you are not going to spend the money. And they ended up with a problem.

7 - And that is why I am in so in favour of SM. Because in lack of a better system it allows us to do some of these things that people say at least you are animal friendly or at least people say when we buy this dairy product we know that these animals aren't in factory farms.

8 – [Would deregulation change the ban on BST ?] Its not welcome by the producers [BST], it would be a last resort. It is an economic position like equity they will use it because they are forced to use it.

8 – [Do you participate in any voluntary ecological programs?] There were 3-4 bigger ones that were out here in the past. Dairy has been targeted in the last 5-10 years. A lot of environmental programs have just been withdrawn. Fact or fiction [the validity of programs] I don't know, but we have not been included in aspects of regulations and they have not made ecological or common sense to the producer and a lot of them have withdrawn and just withdrawn and just conformed to regulation. There is a cost to regulation. When your returns drop from 58-60 to 24 then what will suffer? ... Most of us with supply management have a little buffer.

9 - ... We get criticized from 2 extremes. (a) Inefficiency is protected and you keep all these small backward operations because they all are guaranteed a return; (b) it's a protected system and you aren't allowing new
innovated entrants that would use innovative ways of producing, keeping out some small operations and the local production, - our argument is it takes the middle road. What you end up with is very efficient because inefficient producers don’t stay in business. People reinvest in the efficient. It doesn’t go to the point that the margins are so low that the industry is pushed into these absolutely huge operations, like herds in the 1000s. The reason this happens in the US is that the returns are relatively low, they fluctuate and they are unpredictable. If you have a very large herd your margin is low but you are still going to make some money because it takes way more milk to turn a profit with such a low margin.

9 - Under SM where producers are more likely to invest into their operation whether it is from environmental, food safety or animal welfare perspective it is very fair to say that you have more of an assurance, under a system like that, that farmers are going to invest in their operations and you can count on the quality. Than a system is less regulated. Where you have people running an operation who are constantly wondering and concerned if they are going to make it one year or five years... or however many.

9 - We definitely make the argument that under a more predictable stable system that farmers that are in it for the long haul that are established are more likely to make the investment. Insuring that some environmental perspectives, like nutrient leaching which in the LR is also good for them economically but if the stability isn’t there for them to know that next year they are getting a return. Whether not they make those investments - I would question that. We don’t have their data. It makes common sense from a family business. If you don’t know you are going to be around in 5 years you are not likely going to make the investment but if you know you are because you have a relatively stable market you will.

10 - Crop production is primary agriculture. All the berries and greenhouses etc. are more intensive types of agriculture and that also drives up our land values. Where dairy farming is going to have a problem. We can hardly justify paying those land values for forage production. We would be better off getting on the phone, forget about having your own land, and order a load of hay we would have less headache, it would be cheaper because it cost me so much to own the land it costs me so much in equipment, I have the weather factors, risks. I grow 5-6 crops [a year] if 1 or 2 bomb out b/c I’ve timed wrong weather wise and I get poor quality I still have the investment on the land, equipment and labour input. I would be better off getting on the phone and say give me a load of hay and guarantee me such and such protein and etc. and I got less headache. It gets to the point that your paying 15-20,000 $ an acre which for good berry land is peanuts or for some nursery or greenhouse who spend oodles on environmental systems and glass.

11 - If your profitability per cow is diminish you want to maximize production per cow and one way to do that in the states is to use BST which creates a whole other list of concerns, in terms of milk quality in Canada is very high and one reason for that is b/c we get a decent return on the milk. We can afford to if a particular cow has a high semantic cell count we can afford to dump that milk instead of shipping ever litre of milk that is one thing.

13 - Our farm for example – we have a small land base and we have put a lot of money into working on underground systems going to other properties. We put a lot of dollars into applying it on other peoples properties where we don’t see a return ... we are forced to do to do it right as a company but when there is no money things change. And that means can you do every thing by the book. You look at your risk factors. Can you put a few extra loads on this little piece of property are you going to get caught. And I think you’ll see people doing things as cheap as they can. Right now in the states they aren’t getting any money for their milk and look how they operate. They cut everything they don’t do anything extra.

13 – [What would the ecological effects of deregulation be?] When there is no money people just... we do stuff because we have the money to do it right. Getting rid of manure. You’ll look at getting rid of it the shortest cheapest root. If you have no money. In the US they have harder rules then us. We look at operating cost per gallon to put manure on this piece of land vs. that piece of land 2 miles down the road and its almost double price over there. So we put as much on this piece of land.

Category 5: Thirteen Interviewees’ Perceived Impacts on Socio-economic Equity From Deregulation Supply Management in BC’s Dairy Industry
And

**Category 3: Thirteen Interviewees' Perceived Impacts on the dairy Industry From deregulating Supply Management in BC's dairy Industry**

1- [If we were to deregulate where would the competition come from?]
For sure in the US. It is more expensive to produce and farmers get high price because people want fresh. People aren't going to buy much milk from Wisconsin. We would have to match whatever the market price was. In the US they have real lows and real highs. We would have to prove that we are doing the same as they are. We would have to have larger farms but at the end of the day we would keep 90 percent of the business. We wouldn't lose like 50% or anything like that.

1 - [In your opinion could the typical 100 farm compete?]
I still think there would be more on on-farm cottage industry, they would have there own processing. They would make whatever special products they have. Like the US they would have huge processing but that leaves a void for a lot of the niche market. A group of farmers would get together and we could have Vancouver Island ice-cream We would have to be more innovative than now. And with SM there is no innovation left.

1- [Do you think there would be 1000 cow dairy farms?]
Yes - they are already. There is a new dairy in Pitporward they are planning a 15 000 cow dairy with their own processing for yogart and cheese on the farm. And that is exactly what would happen if supply management would disappear.

1 - [In terms of your price - why are the US and New Zealand farm-gate prices lower?]
Mostly on the scale. For example, in Washington they are milking 300-400 cows they have put money into infrastructure. Most people say I am not willing to do more for less but the average farmer says he works 14 hrs a day well he won't be working 24 hours but in reality he will just have more help. He will have to manage people vs. animals. A lot of employment with processing plants. If SM disappeared right now there might be problems but in 10 years we would have a much larger more dynamic industry than now.

1 - [What would happen with farm communities?]
In the long run more employment. It's the same trend - less bigger farms. Same as already - one farm buys out neighbour. One grows livestock. One grows feed. Instead of 10 shippers there would be 5 shippers and the other will just work for directly or indirectly for the 5. There would still be a lot of cooperation. At the end the employment would increase.

1 - It is a benefit to society that we would have more employment more processing plants. That over a 10 year period the industry would employ 50% more - spin off in long run really good for the whole economy.

1 - [Does it do an adequate job maintaining firmly farms?]
Definitely not! 12 years ago 1500 farms when I started. Now 690, we lost 60% of farms in last 12 years!! It's Foolishness. Before the average size herd was 30-40 cows now its up to 90 cows. With the price of land, quota and all other things what we call family farm is a corporate farm. With the land base, cows, machinery, and buildings the average dairy farm is probably $5 mill. That isn't what the public or consumers would think is a family farm. Every year it gets worst. In 10 years we would be down to 2-300 farms. Same forces at work - bigger is better.

1 - [What would happen if the dairy industry were to deregulate? If farmers had to take world farm-gate price?] For myself it would be an extremely good thing because I have a niche market. I grow 25% a year I have held back because of supply management .... Its holds me back. It would create a shift. You would end up producing products that the consumers want or need. The mainstream market would shift into new products, innovation products such as organic. Also some of the bigger players US companies - if you don't have SM - would be willing to invest in Canada and come in and build new processing plants. Canada is a great place to do business. We have a weak dollar and that gives us a lot of advantage in world market.

2 - [What effect does SM have on farm income?]
It stabilizes farm income - but makes it harder to get bigger.
[What role does SM have in maintaining family farms?]
We couldn't survive in the US. Actually we can't survive under supply management we have other business as well. We sell cattle and have small importing business.

2 - [If BC dairy farmers had to take world price how would this effect the market in the industry?] They would be gone [the average BC dairy farm]. Half your equity is tied up in quota. Now the average is 100 cows. Larger farms would be able to exist [without supply management].

2 - SM - It's a good system - gives a constant price.

2 - [How would deregulation effect farm communities?]
If all the little guys are gone it makes a dead community. It would change everything.
[Abbotsford?] – actually Chilliwack is more dairy. It would substantially cut cash flow to everything in Chilliwack.

3 – [What role does SM have in maintaining the family farm?]
Yes b/c in the free market, where there is instability, like the US, it creates opportunities for larger business producers more business orientated market to take advantage when there is low price the small farms have less access. The larger farms have more opportunities and access to money to expand when they feel the opportunity. The trend in the US is a greater acceleration to expand especially on west coast and even Wisconsin.

3 – [Would the 100 cow dairy survive?]
I can't answer that, it might survive. It's not a business that would flourish or grow. It maybe one of these two-generation farms where they make a living today. By the next generation it wouldn't survive. They would be living off the assets of the farm. It would have a limited life span. Especially if it has to support more than one family, which is typically what happens when you have a transfer from the first generation to the second. You need enough revenue because the margins are so small.

3 – [What are the structural and management differences? For example do larger dairies have less area per cow?]
Yes – the difference between the 100 cow farm [and the extremely large farms] is the owner is the operator [with the 100 cow farm] and they play both roles they make decisions and they do the work. They will be more conscious of what is happening on the farm, in terms of manure management they are the ones putting the manure on the field when you to a larger farm they are managers of workers or managers so they are somewhat displaced from day to day activities so they make decision 'we have this many acres and we have this much manure how many cows how much manure can the land support’ the larger farms will go to the edge of what is acceptable. In the smaller farms they will likely have more acres per cow and the owner operator will be managing the manure practices.

3 – [What effect would deregulation have on farm communities?]
In Chilliwack there would be negative effects, consolidation, fewer farms fewer farmers, to what extent? I don't know it would be a great extent. Chilliwack has a pretty big infrastructure outside of dairy. Some of the smaller milk sheds in the prairies may have a bigger impact. Less processing jobs too.

3 - Economies of scale- they [the US] are ahead of us in terms of consolidation. For example, Arizona 1000 cow over 700 in California. We are probably 10 years behind or better. They have had a chance to build the infrastructure. ... It's a totally different management from a 200 to a 1000 cow dairy.

3 – [What type of farms would prevail in a deregulated environment?]
Larger farms, farms have lower debt, relative to size. A Competitive area in terms of feed would be like the prairies because you have access to lower prices and close to forages grains. So may see a shift toward more production on the prairies. In BC we have very competitive farms but we are restricted in terms of growth due to environmental costs and costs of land is crazy relative to what we can turn in milk production. Some of the smaller ones would grow. May see growth in Ontario and Quebec too.

4 – [What effect does SM have of family farm income?]
Deregulation in the BC dairy farms. They wouldn't be competitive. We would see a lot of milk coming from the states because they have economy of scale. If it was done gradually we would lose quota and get bigger farms. It was done tomorrow they wouldn't be competitive. Big ones would prevail. Even in slow implementation.
COP quite lower with the bigger farms, because you are buying in really big amounts. By giving higher price of milk compensates for higher of cost of production.

4 – [How would deregulations affect farm communities?]
I don’t think the areas would depopulate it would be more city. They won’t leave because they don’t have their farm. If only the bigger farms stay in place they will still have buy the small farms so they will need people to work the farm. It won’t be their farm but they will work there.

4 – [What are the values you associate with SM vs. deregulation?]
I think SM kept the farms really family, every thing in the dairy industry is a big family - the farmers really help each other. In the US they have huge big farms; they don't work with each other; they don't care about their cows. In the east they have 50 cows per farm and they have names - its almost like the cow are their children, and this whole mentality is like the family is still here in Canada, and it wouldn’t be here if it [SM] wasn’t here. In the US cows are used like a machine. Here it’s not that bad the cows are not treated like machine.

5 – [What would the effects of deregulation be?]
You would see a by-polar industry - a lot of larger farms trying to take advantage of econ. of scale and size in term of production and also a niche market, like more very small boutique or specialty production not necessarily organic. Because a lot of large dairies would go to organic as well and we would see a lot of industrialization in the organic industry like in the US and I think we would see that here too.

5 – [SM] ... promote[s] family farms – [this statement is] only effective to a degree.

5 – [What would the social effects of deregulation be?]
Most of dairy is concentrated in lower mainland. Even with SM dairies are moving here. Over time the quality of life with dairy farms will change. Across the boarder farms don’t do as nearly as well as Canadians. Over times you would see fewer larger farms 750-1000 dairies. You would see a comparable pattern in Canada as in the states where the majority of commercial production happens on very large farms. I expect this is going to happen anyway.

5 – [Would the dairy industry remain competitive if it were to deregulate?]
My personal opinion - I suspect we would have a different kind of dairy industry.

6 – [Does SM play a role in maintaining family farms?]
Ya, it probably does but that to me isn't the main objective. I think everything has to be looked at from a business point of view.

6 – [What would the BC industry look like after deregulation?]
The family farm concept would disappear. But the consumer doesn’t have to be concerned about that b/c the consumer just has to be concerned about what they buy in the store. I think the larger farms have the best chance of surviving. The smaller farms under 100 would be gone immediately. Any body under the average would disappear almost immediately.

6 – [Would deregulation have a significant effect on dairy communities?]
I suppose it would. The dairy industry in BC is a significant part of the BC economy. So if you are going to wipe out a substantial part of that industry. It is concentrated in the Fraser valley. But we do have it all over the province. Those outlying areas would probably disappear first. If you take the dairy industry out of a town like Smithers, ya, it’s going to make a difference.

7 – [What are the objectives of SM?]
They are to oversee assure a stable supply of dairy products and to ensure that producers get a reasonable price. Stable supply.

7 – [What role does SM have in maintaining family farms?]
It has a role in a sense that it allows in small, to an extent, families to operate on a smaller scale but I am totally sure how valid that reason is today.

7 – [What effect would deregulation have on the dairy industry?]
The effect would be we would have to get much larger. We would be forced to some extent to go the mega farms. ... Certainly lower price to farm-gate, not to consumers. That is the obvious. It will put guys out of business. Banks will view farming such that either you have lots of equity or money or they simply won't lend to the extent they can now because they are so certain about farm income projections etc. Once you go there you are going to be much inclined as a farmer or manager to keep your facilities to be updated and take advantages of costs savings, which ultimately makes you make you more efficient - which keeps your costs down. In the US with a deregulated market it's a cost struggle, the framers can't maintain the size they need to be to earn a reasonable living and simply go out of business.

7 - [If we deregulated where would the competition come from?]
The US no doubt - geographically. Western seaboard. We could compete for some time because of the currency exchange. We could really compete with the photos sanctuary measures or the higher standards that we deliver to the processor then the US. Like the hormones are illegal in Canada. So the consumer would need to make a choice cheap food but this is the down side. GE and hormone treatment of cows. Some of the US standards aren't as high in Canada. And of course if it is cheap food at all costs then that's what you get.

7 - [What do the smaller farms do in eastern Canada and even the prairies in term of grazing?] To some extent here but here you don't see it as much. You see cows being pastured with the limits available. And that is animal friendly. Any large dairy you won't see it because can't control it; you won't have the land base. It's become more like a factory style farm [in the US].

7 - [What size/scale of farm equals a factory. Or what size would maintain the standards you want?] Anywhere from 150-200 head you can control, you can do these things typically like family farms. You tend to have better control. Once you get to 500, 600, 1000 head you simply manage differently. You rely on more on other people. You can't micro manage every detail you depend on other people. I can't expect other people to work 7 days a week 12hrs a day - but if you do it yourself as the owner it's a different issue as the owner. So once you come into the corporate style farm and your looking at what ever the labour laws allow which is fine but then that is where you lose focus. Too many people around to carry the ball [without SM]. On the smaller system you see it again and again that producers will manage better because they will take the time and won't look at the clock. With farm employees that's your time; that's your job; that's what you do. This is where you find cracks in the system when you get that large certainly when you are talking animal husbandry. If it's a construction company, it's totally different issue because you aren't dealing with animals.

7 - [What would the social consequences of deregulation be?]
The effect will be - in 5 years a lot of producers will give up and sell out. I would pressure the government to revoke the ALR because I would want to sell my property and develop the land. I have to do something. The vegetable industry isn't very good. It's up and down; it's a tough one because your competition is from the US and you just can't make money off it, well the odd time you can. So if you can't grow vegetables what else can I do. I could go organic. Slowly the green space, like the US, farmers will sell out for development. Near any large city it grows and the farmers are retreating; you see it in the US. You can do that but you've taken valuable land out of production forever. And for what? The support industries, suppliers of equipment will shrink too; you will see a major shift. Every one will have to find work. The 4 pillars, fishing forestry mining are almost gone. I'm 48 could do other stuff but not every one could. But it's all negative. I just don't see any positive [without SM].

8 - [What are the objectives of SM?]
To give consumer cheapest highest product, give producers an equitable return for their product.

8 - [If the Industry Deregulated would the BC dairy farmers remain competitive?]
On a wide-open system on the lower mainland you would see maybe 3-4 extremely large operations maybe a few more. Without a guaranteed price for your product - 6 months down the road in the Fraser valley dairy farming will be gone. Land costs will be the key thing to push it out on a deregulated. A few will hang it out. It won't be feasible for anyone.

8 - [What effect would deregulation have on farm communities?]
Devastating effects. It would come slowly. Like I said before. It will become peaks and valleys. In the valleys every body suffers. The peaks never last as long and in that you have break-ups when times are tough its tough on marriages and family units tend to break.
9 - [What are the objectives of SM?]
Generally to supply adequate and safe affordable supply for the domestic product.

9 - [What effect does SM have on maintaining Family farms?]
It plays a role in maintaining the farm structure.

9 - The whole point of the SM system it gives purchasers [producers] the stability to reinvest in their operations in the long run.

9 - [With SM] It doesn't go to the point that the margins are so low that the industry is pushed into these absolutely huge operations, like herds in the 1000s. The reason this happens in the US is that the returns are relatively low, they fluctuate and they are unpredictable. If you have a very large herd your margin is low but you are still going to make some money because it takes way more milk to turn a profit with such a low margin.

9 - I see no reason why the dairy industry in Canada wouldn't resemble what the states is like in the long run without SM. You would end up with very large compounds.

9 - [How would deregulation effect farm communities?]
Ya, if you had those shifts you would. Under SM you have those trends because a lot of it is out of control. The trends would become more and more evident. We use to have processors in the Creston valley and the Bumby valley and Prince George. And they have all shut down its all more concentrated. Under the regulated system of moving that milk where to the processing plants if it were unregulated you would see more of a concentration. So you would see an impact on those outlying regions, socially and economically in some of those smaller region.

9 - [What values would you associate with SM and deregulation?]
SM in the system that's given - the globalized economy. It's a system that provides for the local production of milk to meet the local demand for that product. It means investment in local economies. Relatively long term stability for families involved in dairying, high level of stability and investment in all the secondary industries – feed industry, milk equipment etc. all those sectors benefit from that stability allowing them to get a return feed their families and doing the right things in their communities. It is one that is overlooked. Talk to people into the feed industry in BC its developed into an efficient business and this has happened as a result of stability.

10 - [What role does SM play in maintaining family farm income?]
Yes I think it does. I think one of the big benefits of SM is that it stabilizes. It takes the peaks and valleys out of a system. A SM system has its ups and downs but they aren't nearly as high and low so its much easier to budget and manage both to project the capital budget or for the bank to lend money b/c its a lot more stable and then that way incomes are stable and they way you don't wipe out the weaker operations that quickly.

10 - [What would the BC dairy industry look like if it deregulated?]
We would be left with a handful of producers. I don't think we would survive that well.

10 - [What would changes would occur if margins were squeezed by deregulation?]
I wouldn't sell off acreages and the reason is environmental. I've always been a strong believer that you need a good land base. Because you then have to start hauling off manure or compost. There is a lot of land that needs good manure but who wants it. You could increase the size or I could get ride of the young stock and do strictly milking that would get rid of some manure.

10 - [Is the quality of Dairy in the US or New Zealand different from Canada?]
I can't comment b/c I don't know the standards. Even if we were deregulated its under the health act. You can't sell below a certain level....drugs, herbicides, pesticides – there are different licences in different countries. The Canadian grape grower can't use something that is used in Chile. But those Chilean grapes can come into Canada and compete with Canadian grapes. This is exactly the case with BST. Milk that has BST can come into Canada.

11 - [What would happen with deregulation to the dairy industry in BC?]
A lot of the smaller operations would be wiped out and having the Washington, US as a sizable dairy just literally down the road they could flood this area over night.
11 - [What would happen if the dairy industry deregulated?]
If we were deregulated look at the US. One item would be over crowding of the barn - you want to maximize number of animals per square foot of barn.

11 - If your profitability per cow is diminish you want to maximize production per cow and one way to do that in the states is to use BST which creates a whole other list of concerns, in terms of milk quality. Quality in Canada is very high and one reason for that is b/c we get a decent return on the milk.

11 - The family farm is gone and suddenly you have this as leader of the farm you are managing people rather than cows. When you get into that situation, you have many employees. Its not the same situation as being owner operated. It's difficult to keep tract of 1000 cows as to 100 cows. It's a whole different ball game. It's a big factory basically.

11 - A lot of the money you are making is going back into the community or back into the operations. Keeping framers in relative healthy income sense they are going to support new equipment new vehicles. The spin-offs are endless. As oppose to having no money and worried about going broke every couple of months like in the US.

12 - [What would happen to the BC dairy industry if it were to deregulate?]
The best information I can give you is looking else where, where it has happened like Australia and the UK. What's happened there its been short term boom (2 years or less) where they have had free rain on production with a good price or even an increase in price. Until the market was saturated and the store levels and warehouses from different processors were being filled beyond what was necessary and then the producers took significant hits. Like as far as 50% on price and what has resulted on that is the smaller and medium sized farms disappeared quite quickly because there was no money in it and you tend to get larger and particularly corporate farms.

12 - [Does SM stabilised farm income?]
No doubt. There is no question. That is the biggest benefit to farmers. SM allows the system to set the production levels to meet the market.

12 - The 100-150 cow dairy's do ok. The 400 cows you can utilize your labour better. There is an efficiency there. It's not that efficient again until you get to the 400 level.
No question that the larger farmer manages people.

12 - [What would the social effects of deregulation be?]
Well agriculture is a fairly major contributor to the economy we are generally 3rd or 4th in the province. With dairy it is the largest, except marijuana. Being ranked 3rd or 4th in terms of generating part of the economy. The reality is that everybody eats and a good percentage is produced in the province. And we produce about 65% of our food. Well what s going to happen if sectors start to fail. What will happen with farm maybe it will be taken over by vegetables berries, horticulture I don't know.

13 - [What are the objectives of SM?]
To supply a consistent product to the market. Give a price to a dairy-man that reflects certain market conditions. Like feed costs and inflation. Every one should make a good return on work. Restrict imports coming in from another country at a lower cost.

13 - [What effect does this have on farm income?]
Gives us a stable income so we can project operating costs. So we can project expansion so we can grow, we have doubled our cow size in the last 7 years. One of the main reasons we do it is that we have a fairly good idea what our milk prices will be. So for us the biggest job is controlling the operating cost. We have a guaranteed sale on our product. We get a consistent price.

13 - [Without supply management in the low farm-gate price periods] You will just be dumping inventory. With for example a farm with around 800 -1000 heifer (dairy replacements), if you are short cash what do you do. Well you just start dumping inventory. B/c of value, its in the million in heifers that are just costing you cash in feeding and ... our system always helps us to run an ideal farm you own the land you crop the land you grow your own feed, you raise your own replacement stock, called heifers, you have a nice cycle. When there is no cash, because all these things tie up cash the power of cash and if the milk price is down you get rid of all
those things. And that is the typical US style farm. You go there and there is 3000 cows milking and you won’t find a calf on the farm, maybe a day old one. But hardly anyone raises his own young stock. It takes up too much of their cash. These are things we would have to look at on our farms. It would be a huge change to what you call normal dairy farming.

13 – [What effect would deregulation have on the BC dairy industry?]
The biggest thing is how they do it. If it was over night. And they devalued the quota and the price stayed the same. But to be realistic the neighbour if he can start milking cows and get the same price and not have the huge quota debt we have. I think you would see a real... if it was over night you would probably see a lot of people getting out. But on our farm it would be different because your debt you would have. Its like a mortgage... you would see fare amount of change in the style of the farming in the valley. if they did it slow and paid the farmer out for the quota value. You would see a fare amount of commercial farms. Not so much the smaller family farms. The SM keeps that system going so that you can have a person make a living on 50-60 cows. It’s not as easy as it was 15 years ago. I think you would see a real change into the US style of agriculture. Where they have the highs and lows and it doesn’t just affect the farms but it affects everybody that deals with them. That would be the biggest thing. I don’t think it would ever be good. I think our SM system went further then the people that designed intended it to. I think it shouldn’t be so hard to get in. I think any system should be designed so that any person can get into it. Our system is hard to get in. I think you would see US style farming.

13 – [Are BC’s COP comparable to the US?]
I think the US cost of production is farley comparable. They are not better dairymen than we are up here - they are larger so there are some economies of scale. But to say that they are better at it. Feed costs are feed costs. They might have some labour issues, that are cheaper. Then what we do here. Then it means we would have to change our style here. Her we pay so that people can make a living and have a family and live and that’s how we pay our staff. But if we got into their style we would have to look at minimum wage kind of people and more turn-over. We have the long term staff and those are changes you would see the whole thing would start effecting a lot of people down the road.

13 - You look at your risk factors. Can you put a few extra loads on this little piece of property are you going to get caught. And I think you’ll see people doing things as cheap as they can. Right now in the states they aren’t getting any money for their milk and look how they operate. They cut everything they don’t do anything extra. Feed fro example – they will use all their own feed. They won’t buy feed b/c it’s a cash flow you lay out. And you will get seasonal things. They will be forced to cut labour. You probably won’t put as much into cow health issues.

13 - What is the incentive for the processor to stay in Canada without SM? It effects everybody in the industry the Cat contactor, the equipment dealer. When the price is down in the US its like somebody shut a tap off. Where we project here - OK our tracker is going to be worn out in 6 months. It’s a nice way of doing things. It’s stable.

1 - We have a weak dollar and that gives us a lot of advantage in world market.

5 – [Would we be competitive with the US?]
With our dollar right now we wouldn’t see a lot of US dairy moving in. If our dollar changed you may see more coming in but a lot of inputs are priced internationally.

7 - We could compete for some time because of the currency exchange.

9 – [If the industry deregulated would BC producers remain competitive?]
There are a whole a lot of factors beyond the industries control. For example, you have exchange rate. Right now with the low Canadian dollar the impacts might not be that great.
Category 6: Thirteen Interviewees' Perceived Impacts on ecological health From Deregulation supply Management In BC’s Dairy Industry

1 – [What would the effects on the ecosystem be?]
A lot better. Our farm for example - all the new modern dairy farms are more environmentally friendly the smaller farms don’t manage their manure as well they have older facilities. In terms of Run-off all the newer facilities are brought up to a higher standard its easier to manage environment 500 large farms than 1000 smaller farms.

1 – [What about in terms of manure handling? Larger vs. smaller farms.]
Same thing those farms will have a larger land base they will be renting un-used farms space. There may be a bit more manure but because the industry will grow but we have a lot better knowledge and understanding than 10-20 years ago - about when to put it on etc. the main thing is storage. If you have proper storage you can control when you can utilize it. A lot of the smaller farms haven’t increased storage but have increased cows so they are dumping it. The larger farms tend to do it properly.

1 – [What are the key trends in the industry?]
Programs in the province government that have allowed for more manure storage. More enforcement through the WTO. And Make sure the farmers aren’t spreading in the winter more infrastructure in that end. We have been producing more of our own feed locally we are doing that with a better understanding with manure management. We are not buying as much alfalfa from Washington and Alberta - the market is much smaller. That makes us more competitive.

1 – [Does it do an adequate job maintaining firmly farms?]
Definitely not! 12 years ago 1500 farms when I started. Now 690, we lost 60% of farms in last 12 years!! Its Foolishness. Before the average size herd was 30-40 cows now its up to 90 cows. With the price of land, quota and all other things what we call family farm is a corporate farm. With the land base, cows, machinery, and builds average Dairy farm is probably 5 mill. That isn’t what the public or consumers would think is a family farm. Every year it gets worst. In 10 years we would be down to 2-300 farms. Same forces at work - bigger is better.

2 – [What are structural effects ie manure disposal?]
Ya with a lot of the big farms their manure disposal is a croc. They put too much on. It’s a good living we aren’t rich. But I bought this house cheaper than I could have bought one in town. The way its set up now you can afford to do things properly.

2 – [Runoff different in smaller vs. larger farm?]
It’s the same just depends on the person.

2 – [Are Ecological issues different in smaller vs. larger farm?]
Manure for sure. Its just like the way you treat your soil. It’s a whole changing of views.

2 – [What are the key trends today?]
A lot of it is ego for the bigger farms. Guys have it in their head. Quoting price now – you are looking at a 11-12 year payback. Trends are - getting bigger, and the larger farms have less acres per cow.

3 – [What are the structural and management differences? For example do larger dairies have less are per cow? Yes – the difference between with the 100 cow farm the owner is the operator and they play both roles they make decisions and they do the work. They will be more conscious of what is happening on the farm, in terms of manure management they are the ones putting the manure on the field when you to a larger farm they are managers of workers or managers so they are somewhat displaced from day to day activities so they make decision ‘we have this many acres and we have this much manure how many cows how much manure can the land support’ the larger farms will go to the edge of what is acceptable. In the smaller farms they will likely have more acres per cow and the owner operator will be managing the manure practices.

3 – [What do you do with excess manure?]
There are definitely guidelines, in Washington people will rent more land. There is no question there is compliance. The have very stringent guidelines from the EPA. And people monitor B/C of the larger farms they want an administration that enforces those rules. In BC less stringent because fewer chance of infraction. In general get fewer problems but in the US they are compliant because of the EPA enforcement.

3 - [What are the most important ecological issues facing the dairy industry in the Fraser Valley?]
Protection of fish bearing streams. There is a problem with poor communication between ministry of environment and dairy farmers. We have committees that are trying to negotiate. Farmers don’t have a clear understanding of the guidelines. In the US the guidelines are very clear. It is equally easy for small and large farmers to deal with these issues in our current environment. If it were to deregulate the smaller farms might have a limited cash to deal with these issues and large farmers would have more human or capital resources to deal with it.

3 - [Do you participate in any volunteer ecological programs?]
Through the city we planted some trees on a creek we have, for erosion prevention. With deregulation we would be considered a larger farm. If you don’t have the resources if you are fighting to make a decent living it’s a farm to farm thing. If it made sense we would want to participate. If a farm is barley surviving chances are the higher priority is just making a decent living. It depends on personal philosophy.

3 - [What about regulation on herbicides and pesticides?]
In the US it is comparable but in South America and other countries it’s wide open. There is a big difference with BST. Look at Mexico, china they are importing Canadian genetics and they are trying to grow that industry. They are low cost production areas so they will be exporters eventually.

3 - Some countries say we want to give our farmers whatever advantage we can, any technology that comes to the market we will let them use it. But in Canada our farmers are quite cautious as to quality. Being far between the two countries, different regulation. In terms of competition. Beyond quality.

4 - [What about irrigation differences between larger and smaller farms?]
Both large and small farm can be good for the environment.

5 - [Is there a difference with acres per cow on the small vs. large farms?]
If you deal with it in very traditional methods of grazing and a manure spreader - maybe but other areas of containment and processing and transportation, no - if traditional paradigm grazing, spreader, but I don’t know if that paradigm holds. If you are dealing with huge amounts of waste how is that going to stop.

5 - [Do larger dairy import more feed per cow?]
I don’t think they do. It’s about equal.

5 - The larger more commercial industrial operations are better capable to address environmental issues. Much better able to put in remedial effects that would mitigate harmful environmental impacts where the smaller farms can’t. They have the money, the knowledge the capacity and the size that they can address these issues. The smaller places don’t have the income or the ability or the interest to do it. There are a lot more ecological impacts from 5 – 15 small badly run managed marginal farm vs. one efficient well run, managed large farm. It is easier to deal with a large amount of waste in one location than small amounts in 15 location. Much easier and economical. It is efficient to put in the infrastructure to address waste in one large.

5 - [What are the ecological trends in the BC dairy industry?]
SM has created a concentration of dairy farms in the Fraser valley of dairy. It’s a negotiated national framework not managed by economic indicators like efficiencies. As we have grown as a province, we have seen our right to increase growth as a province. I don’t have a comprehensive analysis but some of the return over feed would be greater in Sask. and Alberta. This implies, one would expect, that without SM more growth would have occurred there. We brought a crutch in here b/c our concentration of distribution, procession and handling. It became more efficient to produce milk in the valley than in outlying regions so you see the business migrate or concentration here because it is more efficient here. In terms of impact - more environmental impacts here because of this. Higher land prices here, higher feed prices. Looking at COP studies, Alberta labour and building costs are higher I don’t know why. Maybe because Higher land prices here.

6 - [Are smaller or larger farms more environmentally friendly?]
The basic thing is more cows is more effluent. So provided you have more land to accommodate the effluent. We have very stringent guidelines in terms of how we spread our manure and when. Provided the larger operations have the land.

6 - [What are the differences between the average BC farm and farms in California or the US?]
Most of these farms do not grow their own forage. It's all purchased so that manures got to go somewhere. If no land close buy... That is what has caused the problems for example in the Cheeno valley in California. Well it's all shut down now. 2 fold problem. Urban encroachment but they also didn't have the land base to get rid of their manure. I have seen some farms in Arizona. The dairy farms themselves didn't have the land base but there was 1000's of acres of cotton so then you get rid of the manure. The US system is similar to us. They are going through the whole scenario in terms of manure management and the environment and the EPA is just as stringent as us. Some variation from region to region they have really been clamping down. It terms of ditches. This guy I know in Washington can't even touch his ditch. And it's causing a lot of problems in terms of flooding.

6 - Washington a couple of years ago had a problem. They lost the ability to transport their milk out of the region because of a problem they had in their dairy herds. And I think it is directly related to the profitability of the industry. If you want to maintain a quality and safe product the worst thing you can do is make it so difficult for the producer so that he has to cut corners where ever he can to survive and cut corners where he shouldn't be.

7 - [What would the ecological consequences be from deregulation?]
Ecologically, large dairies would have to have a large land base to sustain them selves ecologically. With smaller dairies like ours 100-110 cow you have an advantage you can do things on a smaller scale and you can look after the details you have a similar or comparable land-base as a larger dairy but the control is better. You are more spread out rather than one big dairy. ... Simply because of the smaller scale and being able to stay on top of things; the micro-management of the animals.

7 - [What size/scale of farm equals a factory. Or what size would maintain the standards you advocate re control?]Anywhere from 150-200 head you can control, you can do these things typically like family farms. You tend to have better control. Once you get to 500 600 1000 head you simply manage different. You rely on more on other people. You can't micro manage every detail you depend on other people.

7 - [What about manure management in the large vs. smaller dairies?]
With the larger dairies you tend to buy a lot more feed. The larger dairy can maybe do a better job with dealing with manure, although there is interesting stuff going on the smaller scale. There is not a break even point. In the US they are strict when new developments go in they have to use a certain amount of composting in the landscaping. When you get that large you tend to buy a lot of food because you don't have the acres and then what do you do with the waste? It's an issue you can't over pollute because its not even a benefit. So every body understands this, its science. Scientifically, potassium is taken up huge quantities by grass but it creates havoc in reproduction in animals. So very difficult element if you can't control it. Creates problems to get the cow back in calf and all the little things that go with it create a domino effect. So you have to balance the intake. So the farmers are managing it. With the larger farms it's not as easy to control what you buy. Smaller dairies you have that added benefit. Like a lot of vegetable farms that will buy the manure. In most areas farmers will find solutions that are environmentally friendly.

7 - [What effect would deregulation have on the dairy industry?]
The effect would be we would have to get much larger. We would be forced to some extent to go the mega farms. The downside is that if were to go to that size in certain locations there would be environmental concerns as we see the heavily populated location were rural and urban areas are right next to each other and in conflict and they have to sort that out.

7 - On the smaller system you see it again and again that producers will manage better because they will take the time and won't look at the clock. With farm employees that's your time that's your job that is what you do. This is where you find cracks in the system when you get that large certainly when you are talking animal husbandry.

7 - The big thing that we are seeing is water. Availability of potable water for water for use with dairies and what we do with are waste. The US has exactly the same issue. It you look at where agriculture makes sense
more and more we are looking at the prairies, where there is the space but the climate, which is a big factor that is not in our favour.

7 - [If the industry deregulated would less people partake in voluntary programs?]
Yes because all enforcement. If they set up program say 5 cents [from consumer] went to environmental. All wins.

7 - And I am a firm believer in a national food policy that ensures a country or a group of people that they have some security of food and standards of the food. That is where we are in BC. In Canada and we should protect that!

7 – [On BST] It’s a Pandora box because you can use it limited with cows but you can’t close the flood gate. The marketing ploy is really good.

7 - Once you lose control, once you give up food source supply to a different jurisdiction you have lost control of the standards because you can say these are the standards we are looking for.

8 - [What effects would deregulation have on the ecosystem?]
You won’t see 30 cows on 40 acres. It will bring in efficiencies of scale to an extreme – that I don’t’ sometime think that are there personally – running a few large places that there is no way they could be in compliance you try and house 3000-4000 dairy cattle. We get 3-4 feet of rain a year. Now you can’t spread the manure. It would need to be housed. Some would be leaching. In all areas it would be negative but in some areas where they are located would be extremely negative. The larger cows have more cows per acre. In the larger dairy will import half their feed.

9 - ... We get criticized from 2 extremes, (a) Inefficiency is protected and you keep all these small backward operations because they all are guaranteed a return. (b) It’s a protected system and you aren’t allowing new innovated entrants that would use innovative ways of producing, keeping out some small operations and the local production, - our argument is it takes the middle road. What you end up with is very efficient because inefficient producers don’t stay in business. People reinvest in the efficient. It doesn’t go to the point that the margins are so low that the industry is pushed into these absolutely huge operations, like herds in the 1000s. The reason this happens in the US is that the returns are relatively low, they fluctuate and they are unpredictable. If you have a very large herd your margin is low but you are still going to make some money because it takes way more milk to turn a profit with such a low margin.

9 - Under SM where producers are more likely to invest into their operation whether it is from environmental, food safety or animal welfare perspective it is very fair to say that you have more of an assurance, under a system like that, that farmers are going to invest into their operations and you can count on the quality. Than a system is less regulated. Where you have people running an operation who are constantly wondering and concerned if they are going to make it one year or five years... or however many.

9 - Like in the US California is an area that I would start to get concerned about. Huge concentration. With out regulation you end with huge concentration.

9 - [Is their a correlation between size and ecological impact?]
Correlation between size and ecology. It’s difficult because so many factors. A farm that has up to 400-500 cows it can very reasonably have a system in place to use the nutrient in their local land. Provided they have the land. If you have generally productive land the rule is an acre per animal unit. 400-500 acres isn’t a huge land base very much in line with what they use. But when you get into a 5000 cow. It obviously must use an entirely different system of dealing with nutrients. For one thing they aren’t transportable because there is a huge amount of water in them. There are separators. You can separate to liquid. But it requires a whole other way of looking at it. Because you are not too likely to have 5000 6000 acres to use the nutrients to grow crops in the vicinity of that farm. They have to look at alternative ways. Not to say that it can’t be done. It certainly requires a huge investment and when farms are pushed into being that very large size as a result of economics because the returns aren’t that high. You have to wonder if all those investments are always being made. Law suits in the US re: large farms polluting water ways. Whether it is true of not I don’t know but the courts did seen to have thought there was disregard for the environment.

As a rule in Canada we haven’t had that absolutely huge growth. The larger BC farms do have the land-base. A few may have developed a compost system and sold the manure from there.
Other thing that I would say – under a totally deregulated system its not just the size of the farm its where they are going to be located. Are they going to be concentrated in a certain areas. Right now with SM is sharing that market in production in BC is maybe not the best example.

9 - We definitely make the argument that under a more predictable stable system that farmers that are in it for the long hall that are established are more likely to make the investment. Insuring that some environmental perspectives, like nutrient leaching which in the LR is also good for them economically but it the stability isn’t there for them to know that next year they are getting a return. Whether not they make those investments - I would question that. We don’t have their data. It makes common sense from a family business. If you don’t know you are going to be around in 5 years you are not likely going to make the investment but if you know you are because you have a relatively stable market you will.

10 - With our land base, we are little above average as far as land base per cow goes, with our soils and cropping practices and growing season, we could go to 200 milking cows and manage it without it being an detriment to the environment. What we did as an industry (and the ministry is at fault as much as anybody – they told us how to haul shit) in the 60’s and 70’s and they suggested to ... and we were literally dumping it as an industry - in the winter... but not anymore.. we plant cover crops...as an industry we have spent millions of dollars up grading our waste management . There are still some people that need to be tightened up. As a hole as an industry we have come along way and I feel as a producer not guilty like I would of 20-25 years ago...and I am not saying we are done.

10 - [What would changes would occur if margins were squeezed by deregulation?]
I wouldn't sell off acreages and the reason is environmental. I've always been a strong believer that you need a good land base. Because you then have to start hauling off manure or compost. A lot of land that needs good manure but who wants it. You could increase the size or I could get ride of the young stock and do strictly milking that would get rid of some manure.

10 - Is the large farm thing going to happen anyway even with supply management. – I think eventually, I think it is inevitable that the players that are left will be larger. I don't think that is just the dairy business that is business in general. That trend just seems to be there. Things change so much the building style, the equipment, and the family style. A lot of these farms aren't true family operations anymore.

10 – [What are the management differences between these large farms and the typical BC farm?]
In BC all dairymen we all have land. Some more than others and we all grow crops that we utilize through our feeding programs. In Calif. or Idaho they strictly know cows. They don’t crop any, they buy all the feeds be it grain, hay, silage. It all gets trucked in. They are there to manage and run a dairy operation - strictly cows, feed, milk, help the cows, the babies are farmed out.

10 - Even if we were deregulated its under the health act. You can’t sell below a certain level....drugs, herbicides, pesticides – there are different licences in different countries.

10 – [SM] It has slowed the trends somewhat. But it is inevitable b/c our margins are less than there were 10/20 years ago. And if we wouldn’t be producing more milk per cow per man per farm unit we wouldn’t be surviving on the margins. b/c our genetics have come along way on the cattle and crop side. Like varieties of grass. We are doing a better job there our plants and are genetics. Are feed, management programs have changed and if we didn’t have those changes strictly on the price and margin side we wouldn’t be in the industry.

10 - Crop production is a primary agriculture. All the berries and greenhouses etc are more intensive types of agriculture and that also drives up our land values. Where dairy farming is going to have a problem. We can hardly justify paying those land values for forage production. We would be better off getting on the phone, forget about having your own land, and order a load of hay we would have less headache , it would be cheaper because it cost me so much to own the land it costs me so much in equipment, I have the weather factors, risks. I grow 5-6 crops a year, if 1 or 2 bomb out b/c I’ve timed wrong weather wise and I get poor quality I still have the investment on the land, equipment and labour input. I would be better off getting on the phone and say give me a load of hay and guarantee me such and such protein and etc. and I got less headache. It gets to the point that your paying 15-20,000 $ an acre which for good berry land is peanuts or for some nursery or greenhouse who spend oodles on environmental systems and glass.
11 – [What would happen if the dairy industry deregulated?]
If we are deregulated look at the US. One item would be over crowding of the barn - you want to maximize number of animals per square foot of barn. That you may have up to 50% more cows in the stalls.

11 - The other obvious thing for these larger farms is the manure and the smell. The land base if anything is shrinking, b/c you have more people. By getting more manure on that concentrated land base what do you do with it without polluting? The manure has to go somewhere. It would be a real problem here in the Fraser Valley because our land base having smaller farms is a real advantage because at least the manure is spread out. With the larger farms your land is spread all over the place and with manure your looking at 80% water or liquid so your shipping a lot of water.

11 - What has happened here in the Fraser Valley – even 20 years ago even people grazed cows. Mom and dad had 40 cows and 40 acres around the barn they were able to graze them. No in the last 10 - 15 years you have the generational switch. The 2 sons take over and you get 2 families living off the one farm and they expand the herd on the same piece of land and they maybe bye more land. But the land is down the road. So grazing isn't possible because around the barn because you don't have enough land to pasture your cows for any length of time. Pasturing in the valley is tricky.

11 - Environmentally – deregulation would cause larger farms, more smell and more manure on same land base – where to spread.

11 - as the herd sizes have increased in the Fraser valley they may have hired a bit of labour. But I can't think of one operations that the owner isn't involved in a day to day.

12 - If you can control food. 2 basic need shelter, food. If someone can control your food supply they have significant control over you.

12 – [What would the ecological effects of deregulation be?] None, because we can't pollute it is law. If you say larger farms you have to make the assumption that these farms will also have larger tracks of land. To grow their feed and forages and to put the manure on to grow those forages. So you'll see the system with the cows will be concentrated on one unit, like a 1000 cows but with that there is a potential pollutants. So if I went to a 1000 cows I need to get the land equivalent to grow the crops so I can spread the manure to grow those crops. I'll also need to get the bigger trucks or trackers to haul stuff from here farther down the road.

12 - The system is that we bring the feed to the cow we don't bring the cow to the feed. There is no pasturing done. ... To put a 1000 cows on this farms and have them to walk to the field that isn't feasible. With 1000 cows you need like 500 acres. They are going to have to go a long way to feed.

12 - The dairy industry is the largest landholder in this valley. In terms of our size. And we need a lot of land and we are getting pressure form all corners. People seem top take some ownership in our land. Everybody wants part of it. Consumers want part of it they want it to be green and they want to do it all at our experience. Wildlife want it because there are coyotes and eagles flying around here.

12 - We are losing 30 farms a year but the cows have remained constant but production has almost doubled. There are checks and balance in the system. It has allowed the farmers to get out. Businesses don't collapse. They collapse on cash. So you should let it go to bankruptcy. If I am going behind every month. Then I should analyse it. Or get out and cash out. The industry is moving that way [toward the US] when we think about the US we think the mega farms 20 000 cow farms but the stats in the US the average farm size isn't that much bigger than ours. But we tent to focus on the big ones. We have to be profitable. Better more efficient.

12 - [Do the larger cows import more feed?] You have to have the land to go with it. With the larger farms here they are milking the cows on one site because the milking system gets better use of labour and eventually you start moving feed and manure on wheels. You truck it in and you truck it out. You can pick your times of the year and climate system. If you don't do it. Bringing in feed probably won't be a problem but you still have to utilize your manure. If you import
your feed from WA (Alberta better example). Are you going to move your manure there too? And if it is on a dry basis it isn't that unrealistic. But our manure is 90% water.

12 - The social policies are the scary ones. Like taxation for example. Irrigation. In the US they have extensive concrete rivers for irrigation. Well the country has paid for that system. And the farmer actually pays for the use of that water is just a fraction of the cost of that system. Here we have a lot of rainfall but we also have a system of drainage and irrigation that we pay 100%.

13 – [Some farms have] a small land base and put a lot of money into working on underground systems going to other properties. [They] put a lot of dollars into applying it on other peoples properties where [they] don’t see a return. And with [their] size they get checked out a lot, which is fine, so they are forced to do to do it right as a company but when there is no money things change. And that means can you do every thing by the book. You look at your risk factors. Can you put a few extra loads on this little piece of property are you going to get caught. And I think you’ll see people doing things as cheap as they can. Right now in the states they aren’t getting any money for their milk and look how they operate. They cut everything they don’t do anything extra.

13 – [What would the ecological effects of deregulation be?] When there is no money people just... we do stuff because we have the money to do it right. Getting rid of manure. You’ll look at getting rid of it the shortest cheapest root. If you have no money. In the US they have harder rules then us. We look at operating cost per gallon to put manure on this piece of land vs. that piece of land 2 miles down the road and its almost double price over there. So we put as much on this piece of land.

13 - And that is the typical US style farm. You go there and there is 3000 cows milking and you won’t find a calf on the farm, maybe a day old one. But hardly anyone raises his own young stock. It takes up too much of their cash.

13 - You would see environmental things change. You can’t afford to do things right when you don’t have any money. That can relate to hauling manure, where do you get ride of it

Category 7: Thirteen Interviewees’ Perceived Impacts on Animal welfare From Deregulation Supply Management in BC Dairy Industry

1 – There are a lot of reasons for antibiotic use. It is too crowded or improper ventilation or improper facilities. And the larger new facilities are built dramatically different, a lot less [use of antibiotics] per cow then on a small farm because of this.

[What about animal welfare and deregulation?]
Again the smaller farms are limited on their labour base. They try to do every thing themselves they rely on their family and a lot of things that should get done don’t - but on a larger farm the larger farm is more structured and people are put in place to be responsible for certain aspects of the farm and they get done on a routine basis.

2 – [Antibiotics use different in smaller vs. larger farms?]
[In reference to animal welfare in general] Either you’re a good cow man or your not.

2 – [Is Animal welfare different in the smaller vs. larger farms?]
It’s a family business and there are more people involved that aren’t necessarily pulling the wage out. Its not a factory your doing it because you like doing it. But with the bigger farms you get to the point to where the farmer is quote, unquote is a manager that sits in his office and tell people to do this. Those guys don’t give a crap because they are just an employee doing their job.

2 - You couldn’t afford to do it the way you do it now. Right now farmers don’t care about BST but there would be a big push to get it up here. A lot of things – ex are Somatic cell count – white blood cells in the milk that are dead - if it is dead it has been fighting an infection. So if the cow has any kind of mastitis. Those cows
leave. But with deregulation you might keep them as long as you can and make a cent on them - that will affect quality.

3 – [Is there a difference in terms of animal welfare or infrastructure in the smaller vs. larger farms?] Not a huge difference. If the cow isn’t treated right it won’t produce so good, so those who aren’t doing a good job won’t survive. Because the bigger dairies have the resources they can adapt to new technology like stall design and cow comfort. Smaller farms can’t afford to adapt to changes. Because of production benefits.

4 – [What about the ban on BST?]
Government probably won’t hold on the Ban. What will happen is we won’t have enough milk here to supply so the processors will say hey listen pal to government I need this milk from the us and we have this growth hormone I need this milk to stay in business. So there will be this huge pressure.

4 - In the US they have huge big farms they don’t work with each other they don’t care about their cows in the east 50 cows per farm they have names its almost like the cow are their children and this whole mentality like the family is still here in Canada and it wouldn’t be here if it wasn’t here. US used like machine. Its not that bad. cows not treated like machine.

4 – [What about animal welfare?]
Its easier when you have more then 50 because you can afford to buy some things so you can leave the cow in the barn.. But not really big. Small farms in Quebec don’t really move all winter and are get ride of sooner. Because with milking parlour cows walk around and eat when they want and walk around. The peak of animal welfare probably at about 150 cows because you have just enough money to buy equipment foe welfare but still have ...waterbed for the cow...

7 - With smaller dairies like100-110 cows you have an advantage you can do things on a smaller scale and you can look after the details you have a similar or comparable land-base as a larger dairy but the control is better. You are more spread out rather than one big dairy. And face it when you take 10 mega dairies vs. 100 smaller dairies politically you have a smaller group. With the 100 you would have a more numbers. With the smaller politically you would have more influence simply because of your sheer numbers. Larger dairies have some advantage because of the sheer size. The COP could be lower than smaller. Because of the of the huge concentration. But remember you are dealing with animals, husbandry. Now we are talking how can I be animal friendly. We know we can be more animal friendly with a 100 cow dairy than in a 1000 cow dairy. Simply because of the smaller scale and being able to stay on top of things; the micro-management of the animals. The friendly ness is: How do you raise calves, how you handle cows that calves, how do you look after them. Crowded vs. not as crowded. Smaller dairies can pasture so SPCA or animal rights activists are happier.

7 – [What about animal welfare? Do larger or smaller farms use ore antibiotics?]
It’s a number things, it becomes more critical with 500 cows. You would be calving 5 cows a day. You have to have some who really pays attention to that. Because of our location in Canada we have to have big buildings and they are costly to build. So what to you tend to do. You maximize your density of cows – simply because of the up front cost of the building. With a higher density, then perhaps on a smaller farm. That will create stress and problems with the cattle (so you have to use antibiotics) because more leg and feet problems and mastitis. This is very costly. The more stress you put on an animal the more stress you put on you; and something is going to give-so it becomes tougher to manage that. In the US where they just have to build sun shelters. It’s not so bad because your capital outlay isn’t so critical. But then your dealing with massive amount of cows. And cows are a real social animal that prefers live with 50-60 each that they sort understand their pecking order. As you increase density you will see problems because the animals won’t have the space. And this is a big concern because its a costly one. And that is why I am in so in favour of SM. Because in lack of a better system it allows us to do some of these things that people say at least you are animal friendly or at least people say when we buy this dairy product we know that these animals aren’t in factory farms. This is becoming a big deal.

7 - The government can’t maintain ban on BST. Because how can tell a processor that they can’t use milk with BST in it when they have opened the boarders, there would be a riot. You are just cutting way your own standards. That’s the problem. It becomes a see saw. What is economically and politically OK to do. You come into a different realm.

7 - On the smaller system you see it again and again that producers will manage better because they will take the time and won’t look at the clock. With farm employees that’s your time that’s your job that s what you do.
This is where you find cracks in the system when you get that large certainly when you are talking animal husbandry. If it's a construction company it's a totally different issue because you aren't dealing with animals.

8 - [What effects would deregulation have on animal welfare?]
Smaller dairies are definitely better. On the larger scale. Not as good

8 - Well you get your price for your milk you know you can spend X amount of dollars for taking care of your cows. You go to New Zealand they don’t even wipe the shit of the cows so all that stuff is in the milk because they can’t afford it. They are producing volumes of milk low cost, no infrastructure. They are standing in rain in conditions in Canada you would be put in jail for. Same in the US look at California they have outdoor paddocks and they have no cover from the rain. They lying there dying. In Canada you would be put in jail.

8 - [Would deregulation change the ban on BST ?]
Its not welcome by the producers, it would be a last resort.

9 - [Are COP lower in the US?]
A number a things but the main thing is the larger farms. There are other things - you can’t help but think, and I don’t have any data to verify this but with being more unpredictable and lower returns you have to question whether all the investments that should be are being made – like the ones that there isn’t such an obvious return for.

9 - [How would deregulation effect animal welfare?]
In BC the type of structure that you have is the 200 cow herd and those are very manageable the cow has more freedom to move around. In fact, I would argue the cows behaviourally are better off on those farms because they can move around. Than the very small farms. In terms of how cows are handled on those very small older farms is that they were tied up in stanchions for months on end. That was just how they were managed. Now they are in free stall barn where they go lye down in comfortable dry stalls they eat when they want it’s a very they have a lot of freedom more than the really small. When you get into the really large I don’t know. I can’t comment because I haven’t seen that many. I can some how imagine though that if the margins are really tight then you will be less likely to have the same level of investment insuring that everything is done really well. Its not a given but you have to question.

9 - Under SM where producers are more likely to invest into their operation whether it is from environmental, food safety or animal welfare perspective it is very fair to say that you have more of an assurance, under a system like that, that farmers are going to invest into their operations and you can count on the quality. Than a system is less regulated. Where you have people running an operation who are constantly wondering and concerned if they are going to make it one year or five years... or however many.

10 - [What are the management differences between these large farms and the typical BC farm?] In BC all dairymen we all have land. Some more than others and we all grow crops that we utilize through our feeding programs. In CA or Idaho they strictly know cows. They don’t crop any, they buy all the feeds be it grain, hay, silage. It all gets trucked in. They are there to manage and run a dairy operation. Strictly cows, feed, milk, help the cows, the babies are farmed out. They don’t even raise their own livestock.

11 - [What would happen if the dairy industry deregulated?]
If we are deregulated look at the US. One item would be over crowding of the barn - you want to maximize number of animals per square foot of barn. That you may have up to 50% more cows in the stalls. And this is a cow comfort issue and by doing that you are also reducing the feeding space per cow. So the cows can’t lye down necessary when they want to lye down.

11- If you can get away with putting an extra 50% that is a cut to your capital cost. In terms of bedding. A lot of the big operations in the states as gone to mattresses so they don’t have to use much bedding as a cost saving measure. ... If your profitability per cow is diminish you want to maximize production per cow and one way to do that in the states is to use BST which creates a whole other list of concerns, in terms of milk quality in Canada is very high and one reason for that is b/c we get a decent return on the milk. We can afford to if a particular cow has a high semantic cell count we can afford to dump that milk instead of shipping ever litre of milk that is one thing. And these farms in the states are getting so large that they don’t raise their own calves. We feed all our extra milk to the calves. They have calf ranches. The calves are born and then moved to another farm. If they can ship it all, all they ship. When you have a larger herd. Which the economies of scale if
we don't have SM there is going to be a push for larger herd. The family farm is gone and suddenly you have
this as leader of the farm you are managing people rather than cows. When you get into that situation, you
have many employees. Its not the same situation as being owner operated. It's difficult to keep tract of 1000
cows as to 100 cows. It's a whole different ball game. It's a big factory basically. Cull rate in the US. It is much
higher. So the average life span of a cow is much lower. Disposal rate. They are leaving the farm a lot quicker
in the states. It's a combination of factors. BST has had some impact, that's an opinion not scientific basis. In
California for example the average lactation on VHI, which is a 3rd year dairy herd recording system, was, 1.4 -
the cow is 3.5 years old when she has her first lactation, that's not very old. Whereas up in Canada I think it is
about 2.5 . when you get to those larger herds its difficult to pay individual attention to the animals opposed to
the smaller herds.

11 – With the push for higher production, the use of BST will negatively effect animal welfare.

12 – [Is the quality of dairy in Canada higher then in the US?]
To say that we significantly better? The dairy industry is pretty regulated world wide. We don't take second
place to anybody. Compared to the US I don't know maybe 10 years ago. Consumers are getting a very safe
food. Statistically our somatic cell count is better. BST is an animal welfare issue.

13 - When there is no cash, because all these things tie up cash the power of cash and if the milk price is down
you get rid of all those things. And that is the typical US style farm. You go there and there is 3000 cows
milking and you won't find a calf on the farm, maybe a day old one. But hardly anyone raises his own young
stock. It takes up too much of their cash. These are things we would have to look at on our farms. It would be
a huge change to what you call normal dairy farming.

13 - We get information from our vet. And they had cull rates in Canada and the US. There is a whole bunch of
reasons to cull a cow. Bad legs, bad mastitis, can't get pregnant. We look at the average in the industry and
then we try to do better.
A real change in the style of farmer. Somewhere along the line someone is going to take the hit. And in the US
its probably going to be the cow. They are more aggressive with them. They push them harder. US cull rates
are higher. We can project. How much they will push them give them more grain try to get more milk out of
them. We want to be aggressive but. If you get your cow to 3.5 average lactation. In Canada. In the US not
nearly as high. If it is sick do you spend 200$ on it or does it go out the door. We keep the animals because we
need that animal b/c of quota. Lactation Ave.
Interesting what their vet costs are vs. us. Vet bill. Cull rates 30% - 40% in US. In Canada mid 20% cull rates.
We are about 22%. You have a normal cull. We have excess that we sell. You sell your average cow. In the
states they would milk every drop out of every thing and when the cow is done she goes out the door. What
value to you put on keeping your own genetics or raising your own young calves the way they are suppose to
be raised. In the states they often they sell them to a feedlot or calve. So cheaper is better. Try to get the calf
to grow as fast as possible. We don't like to push it if you try to get a heifer to grow to fast it can cause health
issues. You can't put a dollar put on. Its like how kids are getting fatter and how do you get them not to watch
more TV. Its not what you want long term. We could probably get our heifers to calve 5 months earlier but we
aren't forced to do that. I don't like SM sometimes b/c ... our management.

13 - Right now in the states they aren't getting any money for their milk and look how they operate. They cut
everything they don't do anything extra. Feed fro example – they will use all their own feed. They won't buy
feed b/c it's a cash flow you lay out. And you will get seasonal things. They will be forced to cut labour. You
probably won't put as much into cow health issues. It is no money that sic cow might be out the door
faster. They don't have the quota system so they don't have to ship milk, we do. They look at like they have to
put 200$ of medicine into the cow, well why don't I just take the 400$ for beef, in the low price times. SM says
we have to fix that cow b/c we have to shit the milk. There is quite a difference. With the cash-flow is that good
or bad – long term its probably not great.

13 - With SM we are a long term farm. In the US I don't now if that is their goal. It's a weird cycle. Its all short
term in the US. You can do thing right with a larger herd b/c there is money and that is b/c of SM. You go
down to the calf raisers in the states and they have 4-5000 head of calves. Somewhere down the line is going
to be the dead pile because you can't physically – here it's smaller. The calf guy takes a lot of pride in it – you
just run through and feed them.
Category 8: Thirteen Interviewees’ Perceived Impacts on Food Quality From Deregulating Supply Management in BC’s Dairy Industry

1 - [If deregulated would the quality of dairy consumed change?]
It is possible that we would end up with more 'freer' trade and a trailer load of cheese up here and a trailer load going down to the states. It would probably mean less expensive products and less quality coming in.

2 - [Is the quality of milk produced in Canada higher then the US or New Zealand, Australia? Or would the quality of milk change if the industry was deregulated?]
Hassip is just a rumour that they keep holding over us. Everything has to be recorded on paper. You couldn’t afford to do it the way you do it now. Right now farmers don’t care about BST but there would be a big push to get it up here. A lot of things - ex are Somatic cell count - white blood cells in the milk that are dead - if it is dead it has been fighting an infection. So if the cow has any kind of mastitis. Those cows leave. But with deregulation you might keep them as long as you can and make a cent on them - that will affect quality. Or you will be treating them with antibiotic and then you higher chances of residue. They will also generally run a higher bacteria count and that will effect the processing of cheese. With deregulation there will be more pressure to make a cent where you can.

2 - I read in a US or New Zealand magazine, it said try to get it under 2-300 000 thousand - BC average about 120 000. There is a lot more residue I know from working down there. I knew this guy who new how many cows he could have on full antibiotics that he could get by undetected or below the count.

3 - [Is there a quality difference in milk between the US and Canada and New Zealand or Australia?]
Ya, if you look at our guidelines, our processor, bacteria, somatic cell. Risks you run if you are importing from countries that totally different rules and regulation. What they consider quality milk. (we have a much lower tolerance). There is a chance it could be a issue whether it is a big issue I don’t know. Antibiotic contamination is a big issue - a developing country - we have seen this with other commodities - using a herbicides and pesticides banned in Canada for a very good reason but we import products that are produced with it. Good example: BST banned in Canada but we import milk from US that has been produced using it. We import up to 5% of consumption. And it is giving a competitive advantage to those producers. You have to be careful. Even if we have access to different technology on the farm. Some countries say we want to give our farmers what ever advantage we can, any technology that comes to the market will let them use it. But in Canada our farmers are quite cautious as to quality.

4 - Government probably won’t hold on the Ban. What will happen is we won’t have enough milk here to supply so the processors will say hey listen pal to government I need this milk from the us and we have this growth hormone I need this milk to stay in business. So there will be this huge pressure.

4 - In Canada we have one of the highest quality in the world you can only go down. BST are not allowed in Canada. Its proved that these hormones can get into the milk so can’t into the milk. In the world the really high quality milk is Europe and Canada.

5 - [Would the quality of dairy products consumed in Vancouver change if the industry deregulated?]
No change because mainly it would stay mainly Canadian milk and we have certain qualitative issues that would hold up under WTO. In terms of qualitative standard - pesticides, residues, or pathogens in the milk - there are qualitative differences.

6 - [Is there a quality difference in dairy between the US and Canada?]
Ya, there is a different in quality. Washington a couple of years ago had a problem. They lost the ability to transport their milk out of the region because of a problem they had in their dairy herds. And I think it is directly related to the profitability of the industry. If you want to maintain a quality and safe product. The worst thing you can do is make it so difficult for the producer so that he has to cut corners where ever he can to survive and cut corners where he shouldn't be. And jeopardizing the safety of the product that he is producing there is lots of examples of that. For Example the Washington thing. Mexico shipped cheese into the states and killed 50 people in San Diego. It was made from unpurturized milk. Look at England where they have just recently deregulated the dairy farmers are in the ... they are not making any money and they have the foot and mouth out break. Are they directly related well I say you can’t prove that but when things get tough people are going to do what ever they can to survive. In England they were feeding this restaurant swill. And it was feed
to the pigs. They got a problem and why do you get a problem. Well you are trying to cut corners. Corners. This stuff they were getting from these restaurants wasn't properly processed. There was a system in place where it was approved to use this stuff as a animal feed. But the procedures weren't being followed because it costs money. And if there is no profitability in the business then you are not going to spend the money. And they ended up with a problem. In BC we have had 2 outbreaks from small cheese makers. There were selling their product on Granville island and a number of people got sick. And now recently there is another one on Salt Spring. They got misterea or something. We are working within the regulated system. We have a system so we shouldn't have these problems. These are small fledglings that are trying to build a business. They aren't part of the main stream. They are having a problem and why is that. Well my guess is that it is tuff starting a business. If the business isn't profitable I believe you are going to have a problem.

7 - Are their quality differences between Canada and the US or New Zealand? Or what would happen to the quality of dairy consumed in Vancouver.

Quality would be lower simply because the standards are lower in many of the US jurisdictions. The net result would be the consumption of milk would drop. Whether it is organically grown. Once you lose control, once you give up food source supply to a different jurisdiction you have lost control of the standards because you can say these are the standards we are looking for. But the milk is in the bag or carton of milk so they can test it but they will have no idea how the milk is produced and where. They can do a limited amount of tax survey with antibiotics and such but are they going to. They may not so you lose that control as a nation. Once you do that. The government can't maintain ban on BST. Because how can tell a processor that they can't use milk with BST in it when they have opened the boarders, there would be a riot. You are just cutting way your own standards. That's the problem

8 - [What would happen to the quality of dairy consumed in Vancouver if the industry deregulated?] It would decline without assumption. Canada has the highest standards in the world. Lower semantic sell cell counts, lower bacteria. What strives that, well you get your price for your milk you know you can spend X amount of dollars for taking care of your cows. You go to New Zealand they don't even weep the shit of the cows so all that stuff is in the milk because they can't afford it. They are producing volumes of milk low cost, no infrastructure. They are standing in rain in conditions in Canada you would be put in jail for. Same in the US look at California they have outdoor paddocks and they have no cover from the rain. They lying there dying. In Canada you would be put in jail.

8 - [Would deregulation change the ban on BST ?]

Its not welcome by the producers, it would be a last resort.

9 - [How would deregulation effect the quality of dairy consumed in Vancouver?]

Milk is a product that is very controllable b/c every time it is picked up it is sampled so you know what the quality is. You can separate the good from the bad right from the get-go. As long as you have the standards in place it shouldn't happen. The things are often more of a perception. BST is licensed in the US. Canada has given the product a clean bill of health the reason they haven't licensed it is because of animal welfare. From that perspective. But the consumers haven't been very overly accepting of BST. under SM where producers are more likely to invest into their operation whether it is from environmental, food safety or animal welfare perspective it is very fair to say that you have more of an assurance, under a system like that, that farmers are going to invest into their operations and you can count on the quality. Than a system is less regulated. Where you have people running an operation who are constantly wondering and concerned if they are going to make it one year or five years... or however many.

10 - [Is the quality of Dairy in the US or New Zealand different from Canada?]

I can't comment b/c I don't know the standards. Even if we were deregulated its under the health act. You can't sell below a certain level...drugs, herbicides, pesticides – there are different licences in different countries. The Canadian grape grower can't use something that is used in Chile. But those Chilean grapes can come into Canada and compete with Canadian grapes. This is exactly the case with BST. Milk that has BST can come into Canada. The processor would be as dead as quick as we are. You would see the retail and distribution coming out of the dairy areas.

If your profitability per cow is diminish you want to maximize production per cow and one way to do that in the states is to use BST which creates a whole other list of concerns, in terms of milk quality in Canada is very high and one reason for that is b/c we get a decent return on the milk. We can afford to if a particular cow has a high semantic cell count we can afford to dump that milk instead of shipping ever litre of milk that is one thing.
11 – [Without SM] Because you would want to ship as much as possible it would increase somatic cell count and bacteria.

12 – [Is the quality of dairy in Canada higher then in the US?]
To say that we significantly better? The dairy industry is pretty regulated world wide. We don’t take second place to anybody. Compared to the US I don’t know maybe 10 years ago. Consumers are getting a very safe food. Statistically our somatic cell count is better.

13 – [Is there a difference in quality in Canada vs. the US or say New Zealand?]
No different in the states. The only issue is BST. Its approved by them so you can’t say it affects quality. They have good standard. We have an incentive, price, to improve quality. They don’t have an incentive style. BC is the only province. It has nothing to with when soda foods bought out Dairy world. DHIA milk on farm testing look at production semantic cell count, bacteria. When you look at large herds they are probably higher. And it like if you have a lower number the cow will produce more milk. With SM we can afford aggressively deal with it in your herd. Research says lowering it will increase milk yield but does it show well – it’s kind of like changing your light bulb and your hydro bill will be lower. In BC the number is 250, 000 to get the bonus. 80 – 90% in BC probably.
### APPENDIX C: SUMMARY OF CATEGORIES AND CONCEPTS

<table>
<thead>
<tr>
<th>Category and Graph #</th>
<th>Concept</th>
<th>Summary of Concept (and Example of Quote from Interviewees)</th>
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<tbody>
<tr>
<td><strong>Graph 1:</strong> The Costs of Dairy Farming: Thirteen Interviewees’ Perceptions Regarding the Economic Advantages of Dairy Farming in the US Compared to Dairy Farming in Canada</td>
<td>Better Economics of Scale</td>
<td>Larger operations enjoy economic advantages. For example, buying inputs will be cheaper per input when purchased in larger quantities. Quote - “Larger dairies have some advantage because of the sheer size. The COP [cost of production] could be lower than smaller. Because of the huge concentration.”</td>
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<tr>
<td>Ability to Use BST</td>
<td>The use of Recombinant Bovine Somatotropin when injected into cows it has the potential - in the short run at the very least - to elevate milk production. Quote - “BST is banned in Canada but we import milk from US that has been produced using it. We import up to 5% of consumption. And it is giving a competitive advantage to those producers.”</td>
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<tr>
<td>Higher Subsidies</td>
<td>The higher rate of subsidies to US dairy producers gives US producers an economic advantage. Quote - “In other countries that don’t have supply management like the US there are so many government programs that supplement the income of the producer. So we can be competitive if we have a level playing field but if we don’t have supply management and don’t get anything else in return then I guess we couldn’t be competitive.”</td>
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<td>Lower Labour Standards</td>
<td>Wages are lower for dairy labourers in the US and US dairy producers often use illegal labourers. Quote - “I don’t know but there [US] labour cost will be lower. In the US they use a lot of Mexican labour legal or illegal. I’ve travelled down the coast and in California they predominately use Mexican labour. About half it costs here. Even in Washington.” “Her we pay so that people can make a living and have a family and live and that’s how we pay our staff. But if we got into their style we would have to look at minimum wage kind of people and more turn-over.”</td>
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<td>Better Climate</td>
<td>With a warmer or dryer climate, like in some parts of the US, you don’t have to spend as much money on barn infrastructure and you can pasture more easily. Quote - “In the states –their feed costs are lower in certain areas due to climate conditions their capital costs are going to be less in certain areas because of climate. Like Arizonian they would just need to build a shade structure you don’t have to spend a lot of money on buildings.”</td>
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<td>More tax Incentives</td>
<td>Some US states, such as Idaho, entice dairy producers with tax incentives and this gives those producers and economic advantage. Quote - “Some the counties and states that want to attract producers because they need the employment they give tax incentives and in Canada you simply can’t do that.”</td>
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<p>| Graph 2: Thirteen Interviewees’ Perceptions Regarding: What Milk Producing Regions Would BC Dairy Farmers Compete With in the Absence of Supply |
| US - General | The United States in general. Quote - “[Competition would come from:] For sure in the US.” |
| Idaho | The US State of Idaho. Quote - [Competition would come from] the US west coast, Idaho is a growing market.” |
| Washington | The US State of Washington. Quote - “But you look at BC and where dairy production is. There are certainly regions that would be close enough to the main market, I mean the US. For example certainly right across the boarder Whatcom County, beyond that all the north western states.” |</p>
<table>
<thead>
<tr>
<th>California</th>
<th>The US State of California. Quote - &quot;[Competition] would come from California&quot;</th>
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<tr>
<td>N.Zealand</td>
<td>The Country of New Zealand. [where would competition come from with deregulation] Quote - “The states fights to keep New Zealand out, they are the enemy. -Butter and Cheese”</td>
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<tr>
<td>Australia</td>
<td>The Country of Australia. “[Competition would come from] New Zealand probably Australia.”</td>
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<tr>
<td>Alberta</td>
<td>The Canadian Province of Alberta. Quote - “... don’t have a comprehensive analysis but some of the return over feed would be greater ... in Alberta - than implying one would expect that without Supply Management more growth would have occurred there.”</td>
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<tr>
<td>Other</td>
<td>Other countries such as Mexico or other Latin American countries that are expanding dairy production. Or countries such as China that are importing Canadian genetics to build a dairy industry. Quote - “[Competition] It would come from everywhere.”</td>
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<p>| Give the current exchange rate imports to Canada from the US would be limited | Currently, because the Canadian dollar is low relative to the US dollar US dairy products are more expensive that if the Canadian dollar was higher or the US dollar was lower. Quote - “With our dollar right now we wouldn’t see a lot of US dairy moving in. If our dollar changed you may see more coming in but a lot of inputs are priced internationally.” |
| Increase in niche production and very large farms | If supply management no longer existed the structure of the BC dairy farming industry would likely (relative to today) increase the number of niche specialty dairy farms and every large farms (whether organic or regular). Quote - “You would see a by polar industry - a lot of larger farms trying to take advantage of econ. of scale and size in term of production and also a niche market like more very small boutique or specialty production not necessarily organic. Because a lot of large dairies would go to organic as well and we would see a lot of industrialization in the organic industry like in the US and I think we would see that here too.” |</p>
<table>
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<tr>
<th align="center">Graph 3 Cont.</th>
<th align="center">BC would become dominated by a few very large US style farms</th>
<th align="center">With deregulating, after a few years, the remaining dairy farms would resemble the US style of farms in terms of production style and size. Quote - “If [deregulation] was over night you would probably see a lot of people getting out. But on our farm it would be different because your debt you would have. Its like a mortgage... you would see fare amount of change in the style of the farming in the valley. If they did it slow and paid the farmer out for the quota value. You would see a fare amount of commercial farms. Not so much the smaller family farms. Supply Management keeps that system going so that you can have a person make a living on 50-60 cows. It’s not as easy as it was 15 years ago. I think you would see a real change into the US style of agriculture.”</th>
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<tr>
<td align="center">Canada’s style of farming would significantly change</td>
<td align="center">If the dairy industry deregulated the style of BC dairy farms would change to a more factory farm style of production. Quote - “[Without supply management] The family farm is gone and suddenly you have this as leader of the farm you are managing people rather than cows. When you get into that situation, you have many employees. Its not the same situation as being owner operated. It’s difficult to keep tract of 1000 cows as to 100 cows. It’s a whole different ball game. It’s a big factory basically.”</td>
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<tr>
<td align="center">Investment in the environment, animal welfare or food quality will decline</td>
<td align="center">If supply management is eliminated farm income will fall and as a result farmers will not invest as much time and energy into ecosystem health, animal welfare and/or food quality. Quote - “When there is no money people just … we do stuff because we have the money to do it right. Getting rid of manure. You’ll look at getting rid of it the shortest cheapest root.” “We are forced to do it right but when there is no money things change. And that means – can you do everything by the book. You look at risk factors. Can you put a few extra loads on this little piece of property without being caught. And I think [without supply management] you’ll see people doing things as cheap as they can.”</td>
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<td align="center">More employment in the long-run</td>
<td align="center">Without supply management the dairy industry would at first take a hit but then in the long run prosper creating more jobs and more employment. Quote - “If supply management disappeared right now there might be problems but in 10 years we would have a much larger more dynamic industry than now ... In the long run there would be more employment.”</td>
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<tr>
<td align="center">Minimal effect on farm income and dairy economy</td>
<td align="center">Without supply management BC dairy farms would be able to compete with US farms because the Canadian dollar is so weak. And the fact that the number of farms in the province is falling despite supply management allows one to conclude that removal of the system would have a minimal effect on farm income. Quote - “In the US they have real lows and real highs. We would have to prove that we are doing the same as they are. We would have to have larger farms but at the end of the day we would keep 90 percent of the business. We wouldn’t lose like 50% or anything like that.” “Is the large farm trend going to happen anyway even with supply management. – I think eventually, I think it is inevitable that the players that are left will be larger. The trend just tends to be there.”</td>
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<td align="center">Negative effects on economy and farm income</td>
<td align="center">The deregulation of supply management will lower farm income and all dairy farming related economic activity. Quote - “The dairy industry in BC is a significant part of the BC economy. So if you are going to wipe out a substantial part of that industry. It is concentrated in the Fraser valley. But we do have it all over the province. Those outlying areas would probably disappear first. If you take the dairy industry out of a town like Smithers, ya its going to make a difference.”</td>
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Negative economic spin-offs
The deregulation of supply management will lower farm income and all dairy farming related activity which will in turn negatively effect other industries that are connected to dairy farming.
Quote - “[As a dairy farmer] A lot of the money you are making is going back into the community or back into the operations. Keeping framers in relative healthy income and they are going to support new equipment new vehicles. The spin-offs are endless. As oppose to having no money and worried about going broke every couple of months like in the US [without supply management].”
“[with deregulation] where they have the highs and lows and it doesn’t just affect the farms but it affects everybody that deals with them.”

Loss of control of food policy
The loss of supply management represents a transfer of power from national to the international level or away from local control.
Quote - “If someone controls your food policy they have significant control over you.”

Tough on family units
The loss of income in dairy families that will result if supply management is deregulated will be tough on families. Increased stress from loss of income will translate into family stress.
Quote - “[Effects of deregulation would be] devastating ... It would come slowly. Like I said before. It will become - peaks and valleys. In the valleys every body suffers. The peaks never last as long and in that you have break-ups when times are tough its tough on marriages and family units tend to break.”

Increased instability of farm income
With the loss of supply management farm income will be less stable because prices will be more volatile and undependable.
Quote - “[Supply Management] It stabilizes farm income.”
<table>
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<tr>
<th>Topic</th>
<th>Description</th>
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<tbody>
<tr>
<td>Easier to manage a few small farms vs. large amount of small farms</td>
<td>If the diary industry were to deregulate and the structure of the industry shifted toward a fewer number of larger farms (which is likely) then environmental health would improve because it is easier to manage a fewer number of larger farms. Quote - “It’s easier to manage environment 500 large farms than 1000 smaller farms” “It is easier to deal with a large amount of waist in one location than small amounts in 15 location. It’s much easier and economical. It is efficient to put in the infrastructure to address waste in one large.”</td>
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<td>Modern facilities better able to deal with manure</td>
<td>The factor that controls environmental health is not supply management it is how modern the facilities are. So supply management and ecological health are not related. Quote - “The larger more commercial industrial operations are better capable to address environmental issues. Much better able to put in remedial effects that would mitigate harmful environmental impacts where the smaller farms can’t. They have the money, the knowledge the capacity and the size that they can address these issues.”</td>
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<td>Environmental regulations not related to supply management</td>
<td>Environmental regulations are not related to supply management. As a result ecological health is not related to whether supply management is in place or not. Quote - “No [deregulation will not effect ecological health], because we can’t pollute it is law. If you say larger farms you have to make the assumption that these farms will also have larger tracks of land. To grow their feed and forages and to put the manure on to grow those forages. So you’ll see the system with the cows will be concentrated on one unit, like a 1000 cows but with that there is a potential pollutants. So if I went to a 1000 cows I need to get the land equivalent to grow the crops so I can spread the manure to grow those crops. I’ll also need to get the bigger trucks or trackers to haul stuff from here farther down the road.”</td>
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<td>Graph 6 Con't</td>
<td>No difference in manure management between small/large producers</td>
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<td>Increased importation of feed and increased shipping of manure</td>
<td>Without supply management farms will become denser and as a result less feed will be grown on site and consequently more feed will be imported. Further, manure will have to be shipped further because less acre per cow for spreading the manure. Both of these factors could negatively affect ecological health. Quote - “The larger farms here are milking the cows on one site because the milking system gets better use of labour and eventually you start moving feed and manure on wheels. You truck it in and you truck it out.”</td>
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<td>Owner operator has more control</td>
<td>Farms under supply management are usually owner operated whereas farms with out supply management are less likely to be owner operated. This shift would represent a negative effect on ecological health because the owner has more of an incentive, than a labourer, to make sure everything in relation to ecological health gets taken care of. Quote - “The difference between the 100 cow farm [and extremely large US style farms is] the owner is the operator and plays both roles, they make decision and they do the work. They will be more conscious of what is happening on the farm, in terms of manure management they are the one putting the manure on the field. When you have a larger farm they are the managers of workers or managers, so they are somewhat displaced from day to day activities… the larger farms will go to the edge of what is acceptable.”</td>
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<td>Graph 6</td>
<td>Increased Imports from locations with lower standards</td>
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<tr>
<td>Graph 7: Thirteen Interviewees’ Perceived Impacts on Animal welfare From Deregulating Supply Management in BC’s Dairy Industry</td>
<td>Improved technology enhances animal welfare</td>
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<tr>
<td>Graph 7: Thirteen Interviewees’ Perceived Impacts on Animal welfare From Deregulating Supply Management in BC’s Dairy Industry</td>
<td>Not related</td>
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| Graph 7 Cont’ | Extremely large-scale or factory farm style agriculture diminishes animal welfare | With the loss of supply management large-scale farming will prevail and dominate in the province. Further, due to the lowered profit margins that will also follow the loss of the system farmers will be forced to employ a more factory farm style of farming. This will negatively affect animal welfare. 
Quote - “It’s a family business and there are more people involved that aren’t necessarily pulling the wage out. It’s not a factory, you’re doing it because you like doing it. But with the bigger farms you get to the point where the farmer is quote unquote is a manager that sits in his office and tells people to do this and that. Those guys [the farm labourers] don’t give a crap because they are just an employee doing their job.” |
| Lobby to remove ban on BST | With the increase in competition that is likely to follow the loss of supply management farmers are likely to lobby to remove the ban on BST. Because: a lot of the milk consumed in the country will be produced by cows who were injected with BST; processors in Canada will be able to buy milk produced using BST; and farmers in BC will be competing directly with farmers who use BST. BST yields a short-term advantage that dairy farmers may need to remain viable [without supply management]. This will negatively affect animal welfare. 
Quote – “Government probably won’t hold on the Ban [without supply management]. What will happen is, we won’t have enough milk here to supply, so the processors will say ‘hey listen pal’ to government ‘I need this milk from the US and we have this growth hormone I need this milk to stay in business’. So there will be this huge pressure.” |
Less money and time to devote to animal welfare

With the decreased profit margins that will follow the loss of supply management farmer will have less time and money to devote to animal welfare concerns.

Quote – “I can some how imagine ... that if the margins are really tight then you will be less likely to have the same level of investment insuring that everything is done really well. Its not a given but you have to question.”

“If we are deregulated, look at the US. One item [that would occur due to he loss of supply management] would be over crowding of the barn - you want to maximize number of animals per square foot of barn. That you may have up to 50% more cows in the stalls. And this is a cow comfort issue and by doing that you are also reducing the feeding space per cow. So the cows can’t lye down necessarily when they want to lye down.”

Contracting out calf raising

Without supply management BC dairy farms will have to increase specialization to stay competitive. Even the large farms that exist in BC today will have to become more specialized to stay competitive. This will involve things such as contracting out calf raising and represents a negative influence of animal welfare.

Quote – “With supply management we are a long term farm. In the US I don’t now if that is their goal. It’s a weird cycle. It’s all short term in the US. [In Canada today] You can do things right with a larger herd because there is money and that is because of supply management. You go down to the calf raisers in the states and they have 4-5000 head of calves. Somewhere down the line is going to be the dead pile because you can’t physically – here it’s smaller. The calf guy takes a lot of pride in it – [in the US] you just run through and feed them.”
Better control with smaller dairies

Dairy farmers with a smaller amount of cows are better able to stay on top of animal welfare concerns. Quote — “[In reference to animal welfare] With smaller dairies like ours 100-110 cows you have an advantage, you can do things on a smaller scale and you can look after the details. You have a similar or comparable land-base as a larger dairy but the control is better. You are more spread out rather than one big dairy ... We know we can be more animal friendly with a 100 cow dairy than in a 1000 cow dairy. Simply because of the smaller scale and being able to stay on top of things; the micro-management of the animals. The friendliness is: how do you raise calves, how you handle cows that calves, how do you look after them. Crowded vs. not as crowded.”

Quality standards won’t change

Supply management is completely unrelated to quality standards and consequently the removal of the policy will not effect quality standards in Canada. Quote — “Even if we were deregulated its [quality standards] under the health act. You can’t sell below a certain level... drugs, herbicides, pesticides.”
<table>
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<th>Graph 8 Cont</th>
<th>Has the Potential to decline: because cows will be pushed harder; BST will be used; or smaller profit margins will force farmers to cut corners.</th>
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<td>With deregulation quality has the potential to decline. Quote—“If you want to maintain a quality and safe product. The worst thing you can do is make it so difficult for the producer, so that he has to cut corners where ever he can to survive and cut corners where he shouldn’t be. And jeopardizing the safety of the product that he is producing. There are lots of examples of that. For Example, the Washington thing. Mexico shipped cheese into the states and killed 50 people in San Diego. It was made from unparturized milk. Look at England where they have just recently deregulated the dairy farmers are in the … they are not making any money and they have foot and mouth out break. Are they directly related, well, I say you can’t prove that but when things get tough people are going to do what ever they can to survive. In England they were feeding this restaurant swill. And it was feed to the pigs. They got a problem and why do you get a problem. Well, you are trying to cut corners. Corners. This stuff they were getting from these restaurants wasn’t properly processed. There was a system in place where it was approved to use this stuff as an animal feed. But the procedures weren’t being followed because it costs money. And if there is no profitability in the business then you are not going to spend the money. And they ended up with a problem.”</td>
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<td>Quality will decline because increased trade with regions with lower standards</td>
<td>The loss of supply management will result in lowered boarder controls and as a result Canada will import more dairy products from other regions. Due to Canada’s extremely high quality standards, possibly the highest in the world, trade with other regions will only decrease the quality of dairy products consumed in BC. Quote—“Quality would be lower [with deregulation] simply because the standards are lower in many of the US jurisdictions. The net result would be the consumption of milk would drop.”</td>
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