UBC Social Ecological Economic Development Studies (SEEDS) Student Report

Commodity Chain Analysis of the UBC Cinnamon Bun

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Abstract

This paper is an assessment of the sustainability of the UBC cinnamon bun. A commodity chain analysis was used to trace the production process of the major ingredients in the bun from the point of origin to the point of consumption. The commodity chain analysis was then used as an indicator of sustainability to assess whether the UBC cinnamon bun is ecologically, economically and socially sustainable. Recommendations are suggested for the UBC campus sustainability office to improve the sustainability of the UBC food system and questions are provided for future investigation.

As students at UBC, we are often forced to consume within the UBC Food System because we spend much of our day on campus and we often have to buy food. We have the freedom to choose what we consume but nonetheless, many decisions are made for consumers before purchasing. These decisions dictate what food is available and reveal the values of the participants in the system. For example, students at UBC value affordability so much of the food available on campus is relatively inexpensive. Purchasers at UBC Food Services value profitability so food is purchased largely based on price and hence few organically grown products are used.

Through discussions and study, our working team has questioned whether UBC Food Services, a major component of the UBC food system, values sustainability. We have evaluated the UBC cinnamon bun, a UBC Food Services product, to discover whether it is a sustainable food. From our findings we have concluded that the cinnamon bun is not sustainable and UBC Food Services does not put high value on sustainability. [redacted]

To understand our evaluation of the sustainability of the UBC food system, we must first give our definition of sustainability and sustainable food systems. We have based our definition of sustainability on Gleissman's idea: "[a sustainable system is] a system in perpetuity because the ability of the system to renew itself or be renewed is not compromised"[1] and on the ideas of Kloppenburg et al.: "sustainability…is characterized by a philosophical relationship…that is non-exploitative and regenerative" [2].

Ecological sustainability is measured by the ability of an ecosystem to perpetuate and renew itself. Energy put into the ecosystem must balance energy put out in order for the health of the environment to be sustained. Kloppenburg et al.'s characteristics of diversity of food choices and proximity/seasonality of eating are goals for a food system to become more ecologically sustainable[2].

Economic sustainability is measured by profitability and the ability of a system to maintain a decent standard of living for all participants[2]. An economically sustainable food system must not contribute to a radical polarization of wealth as a dramatic concentration of wealth in few hands cannot sustain a desirable standard of living for all.

Social sustainability is measured by the ability of a system to allow the human race and societies to perpetuate. Many factors can affect this perpetuity including human health, social harmony and social justice. A socially sustainable food system should follow the characteristics set out by Kloppenburg et al. of being participatory, just/ethical, healthful and culturally nourishing[2].

A whole food system is sustainable if it fulfills the criteria of ecological, economic and social sustainability. Our working group envisions a fully sustainable food system, as per the criteria above, as the goal for the UBC food system.

Value Assumptions

Through group discussions, our team found a shared community-based value system as opposed to an individual freedom based system. We value the local communities we live in and the larger global community of which we are a part. We believe a food system is an integral part of a healthy community as food holds cultural and social meaning and can bring people together. Feenstra describes our group belief well when she says, "not only does an adequate, varied diet contribute to individual health, but the way food is grown, distributed and eaten also profoundly affects the environmental, social, spiritual and economic well-being of the community" [3].

Within a food system we place importance on the community's food security and assured access to a safe, affordable and socially acceptable food supply[4]. We believe a community's food system should

contribute to the local economy by offering local food products, economic returns into the local economy and comfort, safety, equity and education for all community members.

We have also found a weak anthropocentric belief in our group. We value the natural, non-human world immensely but believe that measures to preserve basic, life-sustaining human rights, such as food, water, and shelter should take precedence over measures to preserve the natural world[5]. We believe humans should not work towards dominion over nature or others but should work towards balance and harmony in the human and natural world.

To achieve harmony, we believe humans must realize that everything in the world is interrelated and that components of a system are a part of the whole. The UBC cinnamon bun is an important component of the whole of UBC Food Services as it is a signature item and widely consumed on campus. The UBC cinnamon bun is a "legendary" product [6], and the ingredients and how it is made indicate some of the values of the whole food system. [redacted]

To investigate the sustainability of the UBC cinnamon bun, our group conducted an interview and tour of the UBC baking facilities with Mr. Don Sannachan, the head baker of the university bakeshop. Mr. Sannachan provided information on how the cinnamon buns are prepared, the ingredients used and their origins, the recipe (see appendix A) and the nutritional analysis (see appendix B).

Using this information, we employed *commodity chain analysis* as an indicator of sustainability. It is a technique that traces each component of a product from its point of production through to its point of consumption[7]. Using the commodity chain analysis, we assessed the bun for ecological, economic, and social sustainability and developed recommendations to increase the bun's sustainability. We also identified possible future research questions that could be addressed in the continuing investigation of the UBC food system's sustainability. We look at the production process of all the major components of the UBC cinnamon bun: flour; eggs; butter; cinnamon and sugar.

Flour[8,9]	**Eggs**[10]
Wheat grown and harvested in Alberta ⇓ Wheat transported by truck to grain elevator ⇓ Wheat dried to increase storage life ⇓ Grain transported by truck to mill ⇓ Grain milled into flour ⇓ Flour packaged ⇓ Flour transported by truck to wholesaler ⇓ Flour transported by truck to UBC	Hens produce eggs in BC's Fraser Valley ⇓ Eggs transported by refrigerated truck to grading station ⇓ Eggs washed to sanitize ⇓ Eggs passed under a bright light to detect contamination ⇓ Eggs packaged ⇓ Eggs transported by truck to UBC
Butter[11]	**Cinnamon**[12,13]
Cows produce milk in Fraser Valley ⇓ Milk transported by refrigerated truck to processing plant ⇓ Milk pasteurized ⇓ Butter fat separated ⇓ Cream pasteurized ⇓ Cream churned to make butter ⇓ Butter packaged ⇓ Butter transported by refrigerated truck to UBC	Cinnamon grown in Sri Lanka ⇓ Cinnamon transported by truck to processing plant ⇓ Outer bark removed ⇓ Inner stem ground ⇓ Ground cinnamon transported by sea or air to wholesaler in Canada ⇓ Ground cinnamon transported by truck to UBC

Sugar[14-16]
Sugar beets grown and harvested in Alberta ⇓ Sugar beets transported by truck to processing plant ⇓ Beets washed and sliced ⇓ Betts diffused (sugar drawn into hot water) ⇒ byproduct: **pulp** (the residue after most of the sugar is removed)

⇓
Sugar liquid limed & filtered (purify by use of lime)
⇓
Water evaporated off
⇓
Liquid boiled & centrifuged to create sugar ⇒ byproduct: **molasses**
⇓
Sugar transported to wholesaler by truck
⇓
Sugar transported by truck to UBC
⇓
Sugar transported to UBC by truck

Assessment of sustainability

The UBC cinnamon bun is a "Made in BC" product which means that greater than 50% of the ingredients originate in or are processed in BC. In the case of the cinnamon bun, 51% of the ingredients originate in BC. It is encouraging that the signature item of UBC Food Services is a "Made in BC" product as it encourages local food consumption. Unfortunately, the cinnamon bun is one of only two such products made by UBC Food Services and it barely meets the ingredient percentage requirement. The other ingredients largely originate in Alberta which is relatively proximate to the point of consumption and therefore desirable for sustainability. Despite these positive aspects, much can be done to improve the sustainability of the cinnamon bun as outlined below. [redacted]

[redacted]

Ecological sustainability

The wheat, sugar beets and cinnamon used in the UBC cinnamon bun are grown in a conventional monoculture where synthetic fertilizers and pesticides are grown (***sources? References?)***. These products are not grown in an ecologically sustainable manner, as conventional monocultures require high inputs to produce high yields, which cannot be sustained forever.

The butter is produced by the dairy industry, which currently uses land and water resources under intensive production systems. This intensive use and the sensitivity of the environment make operating in an environmentally sustainable manner a significant challenge for dairy producers[17].

All products used in the bun are harvested and/or transported using fossil fuel burning machinery. Transporting a commodity a long way is not ecologically sustainable as fossil fuels are a non-renewable resource and are a major source of carbon emissions into the atmosphere[18].

Economic sustainability

The cinnamon bun is a profitable product and its use of BC butter and eggs contributes to a decent standard of living for BC farmers. As the wheat and sugar beets are grown and processed in Alberta, the local BC labour force is not used and money is not added to the local economy. The cinnamon is produced in countries which still exploit workers by not offering a fair wage[13] which is not economically sustainable as it contributes to the polarization of wealth.

Social sustainability

The cinnamon bun is a socially acceptable and desired food. It is culturally nourishing for the North American culture as it is a traditional food but people from other cultures may not obtain metaphysical nourishment from the bun as they have not grown up with such food.

The cinnamon is produced in countries which exploit labourers and may use child labour[13]. This contradicts social sustainability as exploitation of humans cannot lead to social harmony. [redacted]

[redacted]

The physical nourishment provided by the cinnamon bun does not contribute to optimum human health. The buns are high in refined sugar and fat and have little fibre or micronutrients. The bun may also replace other healthier food choices such as fruit, cereal or yogurt for breakfast displacing these nutrient rich foods.

Recommendations to the UBC Sustainability Office to improve the sustainability of the UBC cinnamon bun and the UBC food system

- Create a clear food policy for UBC which explicitly values sustainability
- Partner with many faculties across campus to educate all students on the impacts of their food choices
- Partner with UBC Food Services to promote and put into action the characteristics of a sustainable food system:
    - ◊ Purchase more local products (ask suppliers often where products are grown or made)
    - ◊ Research food purchases more fully to discover how foods are produced and to avoid exploitative or socially/ecologically/economically damaging commodities
    - ◊ Products which cannot be produced locally such as cinnamon should be imported from the closest producing country to reduce transport distance
    - ◊ Modify the "Made in BC" criteria to require more BC product content
    - ◊ Encourage production and promote "Made in BC" products through advertisements and pricing specials in retail food outlets
- Adopt a sustainability advocacy role not limited to the UBC campus community
    - ◊ Work with dairy farmers and government to find ways to minimize the intensive water and land usage in milk production
    - ◊ Work with community partners to promote local/ecologically sensitive eating
- Provide nutritional information for consumers to make nutritious food choices and thus sustain their personal health

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Future Questions

Is UBC Food Services receptive and willing to adopt sustainability recommendations?

Does UBC Food Services have access to more sustainable products?

What is the sustainability of the various packagings used in the cinnamon bun ingredients?

How much of an influence does the UBC community have on commercial producers? Could the UBC community change farmers' agricultural practices?

What kind of knowledge do members of the UBC community have about current food production techniques?

How could genetic engineering of the products in the UBC cinnamon bun affect the bun's sustainability?

Is egg production in the Fraser Valley humane?

Are livestock raised in an ecologically sensitive way in the Fraser Valley?

Is child labour used in the production of the cinnamon in the UBC cinnamon bun? If so are there other non-exploitative sources of cinnamon?

Conclusion

This commodity food analysis of the UBC cinnamon bun has revealed that the bun is not a sustainable product. This indicates that sustainability is not a premier value of UBC Food Services. In order for our campus food system to become sustainable, all components of the system including UBC Food Services must make sustainable food production a priority.

Appendix A - Recipes

Cinnamon Bun Dough

Yield: 155 lb
Portion 1 lb
Portions in Yield: 155

Quantity and Unit	Ingredient or Recipe
22 L	Milk 2%
10 lb	Sugar Granulated – Roger's
8 lb	Margarine 20 Kg
4.5 lb	Bakers Yeast
8 lb	Eggs Whole Frozen
1.25 lb	Salt
40 kg	Flour – All Purpose (Baker's)

Cinnamon Buns

Yield: 35 doz
Portion: 1 doz
Portions in Yield: 35

Quantity and Unit	Ingredient or Recipe
165 lb	Cinnamon Bun Dough
25 lb	Cinnamon Bun Mix
2.27 kg	Margarine
6.82 kg	Sugar Granulated – Roger's

6.82 kg	Sugar Golden Yellow (Brown)
1.36 kg	Cinnamon

Method

1. Roll out dough to rectangle shape ½" thick.
2. Brush dough with melted margarine.
3. Mix white sugar, yellow sugar and cinnamon together. Sprinkle on top of dough.
4. Roll length wise like a jelly roll.
5. Cut into 8 oz. rounds.
6. Grease 16" x 10" x 2" pan with margarine. Sprinkle with yellow sugar.
7. Place buns horizontally in pan.
8. Let rise in proofer until double in size. Approx. 1 hour.
9. Bake at 350°F for 25-30 minutes.

Appendix B - Nutritional analysis of the UBC cinnamon bun

∗Per 1 dozen (12 buns)∗

Calories (kcal):	6301
% Calories from fat:	30.7%
% Calories from Carbohydrate:	62.2%
% Calories from Protein:	7.1%

		Percent Daily Values (based on 2000 kcal diet)
Total fat (g)	220 g	338%
Saturated fat (g)	90 g	452%
Monounsaturated fat (g)	87 g	392%
Polyunsaturated fat (g)	27 g	122%
Cholesterol (mg)	730 mg	243%
Total carbohydrate (g)	1001 g	334%
Dietary fibre (g)	53 g	212%
Protein (g)	114 g	228%
Sodium (mg)	4846 mg	202%
Potassium (mg)	3700 mg	106%
Calcium (mg)	705 mg	71%
Iron (mg)	48 mg	265%
Zinc (mg)	15 mg	98%
Vitamin C (mg)	6 mg	10%
Vitamin A (IU)	5682 IU	114%
Vitamin B_6 (mg)	1.4 mg	68%
Vitamin B_{12} (mcg)	1.7 mcg	29%
Thiamin (mg)	7.4 mg	496%
Riboflavin	5.5 mg	326%
Folacin (mcg)	1611 mcg	403%
Niacin (mg)	56 mg	281%

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