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Exploring Ways to Lighten AMS Food and Beverage Department's Ecological Footprint - Venue: Blue Chip Cookies

University of British Columbia
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Abstract

Blue Chip Cookies is an AMS food outlet that caters to a large number of students, staff, and faculty on the UBC campus. They have adopted several sustainability initiatives; however, there is still opportunity to further reduce the ecological footprint (EF) at this particular food outlet. In support of the recent AMS Lighter Footprint Strategy- reducing the university campus's EF to sustainable levels, our group has developed a vegan ginger spice cookie for the venue with a lighter EF. We have also proposed promotional tools to increase the consumer awareness of EF reducing measures currently in place at Blue Chip Cookies.

Introduction

As the world's population continues to rise at an exponential rate, it becomes exceedingly difficult to extend the Earth's biocapacity. A way to measure ecological impact, or rather, ecological footprint (EF), has recently been employed for nations, institutions and individuals. Wackernagel and Rees first introduced this concept in 1996, and it is represented by global hectares (gha) of productive land and water required to produce the needs and absorb the waste of a given group, individual, or action (Mitchell, 2007). This includes both the ecological goods and the services we consume. Between 1961 and 2003, the EF of an average Canadian nearly doubled to 7.6 gha, giving Canada the fourth highest EF in the world. If the global population consumed at an equivalent level, we would exceed the Earth's carrying capacity by four-fold (Mitchell, 2007).

Food contributes to a large portion of world's EF. Furthermore, animal-based products account for approximately three quarters of the food footprint. A considerably larger amount of resources is required to produce meat than is required to produce an equivalent amount of plant-based products (Chambers *et al*, 2005). Therefore, changing food consumption patterns to reduce animal-based products is an excellent starting point for decreasing the EF of food.

Universities are accredited bodies that generate much of the global scientific research. Through personal practice and a growing body of data, they have a strong position to influence consumption patterns in global and local communities. For these reasons, we are investigating

ways to decrease the EF of the UBC food system, which acts as a microcosm of the global food system (Rojas *et al*, 2007). More specifically, we are working in collaboration with AMS Food and Beverage Department (AMSFBD) to improve on the current EF at Blue Chip Cookies.

We have researched initiatives that other establishments, such as local restaurants and other universities, are taking in order to decrease their resource consumption. We contacted several stakeholders in order to gain knowledge about the UBC food system and to determine if they had any suggestions for changes that they would like to see take place. In order to assess the demand for vegan baked goods at Blue Chip, we conducted a survey among UBC students, employee and visitors. After completing our research and analyzing survey data, we have constructed recommendations for Blue Chip staff, AMSFBD, and future AGSC 450 students about possible methods for decreasing the EF at Blue Chip.

Reflection on the Problem Statement

The newly proposed AMS Lighter Footprint Strategy looks to environmentally redevelop associated businesses and buildings within the UBC campus (2008). In an effort to collaborate, our group was assigned the task of formulating alternative menu items with a lower EF for food venues in the Student Union Building (SUB) and continuing with the sixth year of the UBC Food Security Project. We decided to develop lower EF menu items for Blue Chip Cookies (later abbreviated as Blue Chip), which is a popular venue located in the SUB. Changes made on this scale are incremental, yet still represent a large step in the right direction.

Blue Chip serves students, faculty, UBC employees and visitors that swell onto campus on a regular school day. According to the manager, Bev Teh, they will sell an estimate of 200-300 cookies, 25 dozen muffins, 4 dozen scones and 2 dozen croissants in a single day (B. Teh, personal communication, March 3, 2008). Still, this estimate does not include their specialty

goods such as cupcakes, biscotti and hot cross buns. These numbers alone prove the popularity of Blue Chip, which makes it an ideal venue to introduce new products such as vegan goods.

In this way, consumers of all influences can be exposed to vegan options, which do not include any animal products. Animal products are essentially a conversion of plant matter into protein products. Had we consumed the plant directly, we wouldn't have to pay the hypothetical 'cost' of energy converting (Goodland, 1997). This is more commonly expressed as the sum of hectares (ha) of land required to produce one tonne (t) of product and to absorb green house gases (GHGs) emitted as the result of production. Using this measurement, the EF for beef, fish, poultry, eggs, whole milk and butter are 22.89, 8.03, 7.95, 7.62, 2.35, and 17.42 ha/tonne respectively (Barret *et al, 2*002).

The UBC population includes those from a huge variety of food cultures, some of which may not include the concept of a vegan diet and its potential to lower personal and community ecological footprints. More importantly, most of this population lives according to North American standards, which are exceptionally high. Along with Japan, Europe, and a growing number of other countries, the United States and Canada belong to the "consumer class', an estimated 1.4 billion (World Watch Institute, 2004). These countries require more land and water to produce their energy, goods and services, as well as to absorb the resulting waste. If the Earth fosters a growing population that strives towards North American standards, we will exhaust our natural resources and cause irreversible destruction to the environment (Mitchell, 2007). Therefore, a change is necessary. An important component of this change involves a reduced reliance on animal products, as is demonstrated by the vegan diet.

Another way to reduce the EF of menu items is to include ingredients from local producers. This will eliminate the transport costs associated with freight, air and boat travel.

However, the AGSC 450 class has not yet investigated Blue Chip, and the sources for their ingredients have not been evaluated. Therefore, it is important to establish their original sources before recommending alternate suppliers.

Wackernagel and Rees estimate that 30% of our EF is attributed to food-related activities (1996); this makes it the perfect target for reformation. Foods that require less transportation and resources for production are the key to reducing EF for individuals and businesses. Therefore, the investigation of vegan products and local ingredient suppliers are important aspects of reducing the EF for AMS food outlets such as Blue Chip.

Reflection on the Vision Statement

Our group agrees with the guiding principles of the vision statement; we support initiatives towards a more sustainable campus. We realize however, that improving the sustainability of such a large institution is multifactorial, making implementation of any changes very difficult. One area of importance among our group is the need to increase education and consumer awareness. Many students are unaware of the sustainability initiatives already taking place at UBC, and many more are unfamiliar with the concept of EF. We also feel that a greater emphasis should be placed on sourcing foods from local producers and suppliers. Reducing food miles and therefore, fossil fuel emissions, is an excellent way to decrease the EF of foods.

Methodology

As we have mentioned above, there are a lot of ways in which we can reduce our EF. For the purpose of our project, we will concentrate on lowering Blue Chip's EF by focusing on food.

First we investigated measures taken to lower EF at local restaurants and universities across Canada and the US. Highlighted restaurants include Raincity Grill, Aphrodite's and Vij's. Interviews were conducted in person and over the phone. Using a web search and materials

provided in class, we uncovered the many programs in place at universities across the continent, including those at UC Davis, UC Santa Cruz, McGill, Concordia and the University of Saskatchewan. We also took a closer look at measures taken by the AMS and Sustainability office, and helpful documents included the AMS Lighter Footprint Strategy and AGSC 450 papers from 2007 (Group 10, 17 and 20) and 2006 (3, 6, 8 and 13).

Blue Chip sells products largely made of butter, eggs and milk. These ingredients have high ecological footprints, and the most direct way of reducing this impact is by reducing the reliance on animal products. In order to determine the comparative EF of a broad range of foods, we conducted a literature review. Important resources include the paper by Barrett et al (2002).

In addition, multiple consultations with stakeholders greatly helped in guiding our project. In conjunction with scenario 3 groups, we held interviews with AMS Food and Beverage coordinator Nancy Toogood and Blue Chip manager Bev Teh. This helped to determine relevant business infrastructure for Blue Chip and other AMS food outlets, including ordering, suppliers, product sales, popularity of products and the capacity to expand or change the menu.

Bev Teh wished to develop a spice cookie, so our group researched recipes for vegan ginger and vegan apple spice cookies. Following group approval of the recipes, we conducted a tasting survey with 11 staff members at Blue Chip and Nancy Toogood on March 25, 2008 at the Blue Chip venue. In conjunction with the tasting, we administered an online survey to determine consumer acceptance of vegan goods and what vegan products (if any) consumers would be willing to purchase. It was designed through Survey Monkey and ran from February 28, 2008 to March 20, 2008. We received a total of 279 responses. A paper survey with similar objectives was administered by Group 28. The paper survey received 148 responses.

Survey results showed a demand for chocolate substitutes, local and/ or organic ingredients, and less interest in vegan products. For this reason, we investigated current origins of Blue Chip ingredients and determined the price range of alternate suppliers through telephone interviews.

Surprisingly, survey results also indicated a lack of consumer awareness concerning Blue Chip's compostable cups and reusable mug campaign. Therefore, we developed two promotional advertisements suitable for display in the storefront. Please see Appendix C.

Findings

Reducing the EF: Efforts at Local Restaurants

Raincity Grill

Many ingredients on Raincity's menu come from local organic supermarkets (S. Alexander, telephone interview, Feb. 13, 2008). Example menu items include lamb from Pitt Meadows and locally grown potatoes. They also maintain a "100-mile menu" so that customers are aware of their local procurement. By incorporating a larger proportion of locally grown and organic food into the menu, Raincity is able to achieve a lower EF.

Aphrodite's Café and Pie Shop

The manager and owner Alan Christian used to live and work at an Abbotsford 50 acre organic farm co-op called Glenvalley. They currently grow raspberries, strawberries, and many varieties of vegetables (A. Christian, telephone interview, Feb. 27, 2008). This is just one of the suppliers for the restaurant and the list includes Rainbow's End Farm, Thomas Read Organic Farm, UBC Farm, and others. The café's salads are produced from UBC Farm products, and Christian is impressed by their popularity. The menu changes seasonally, but a small menu stays constant as their ingredients are procured year round from non-local sources. This follows

Christian's philosophy that food should go straight from the field to the stomach without much processing or chemicals.

Vij's Restaurant

The owner of Vij's is also fond of organic food and regularly shops at the organic market on Granville Island to supply ingredients needed for the menu. He also gets produce and organic beef from local organic farms such as Gary Hazelmere's Organic Farm (V. Vij, telephone interview, Feb. 19, 2008).

Biovia Wholesaler

All three restaurants obtain organic foods from the wholesaler Biovia. The manager Srederiken buys different commodities and foods from local organic farmers and then supplies these to restaurants such as Aphrodite's Café. The majority of organic ingredients she receives are produce. For dairy products, Srederiken sources from local farms such as Avalon and those in the Fraser Valley. For meats, she sources from local farms such as Polderside Chicken.

She believes that money from imported foods should instead go to local farmers. Moreover, using organic local foods gives more back to the farmers (K. Srederiksen, telephone interview, Mar. 12, 2008).

Reducing the EF: Efforts at Universities

As the topics of global warming and climate change become commonplace, more university campuses are attempting to decrease their own EF. An area of improvement for many institutions is the food system and associated post consumer waste. Here is a summary of some influential programs we discovered:

- Concordia University:
    - LUG-A-MUG campaign: The school sells recyclable, reusable, locally made mugs that are made from 100% post-consumer material. The mugs come with a

pamphlet that contains information about decreasing consumer waste and how to be a responsible consumer.
    - 1%: Sustainability Action Fund: This is a 25-cent per-credit fee levy that applies to all students in an attempt to make Concordia one of the most sustainable campuses in Canada. Approximately $150,000 is generated every year for this fund. The money is used to support sustainable infrastructure changes, student driven projects, and increase awareness about sustainability across campus (Sustainable Concordia, 2008).

- The University of California:
    - UC Davis: A number of grants have been awarded within the past two years to initiatives relating to the sustainability of their food system (UC Davis Sustainability, 2007).
    - Santa Cruz: There is a farm-to-college program in place that brings fresh, local produce to the student dining halls (CASFS, 2007).

- McGill University:
    - They have an Organic campus with the purpose of "bringing low cost local organic fruits and vegetables to the community." They have various programs offered, such as cooking workshops and delivery of fresh local vegetables weekly (McGill's Organic Campus, 2008).

- University of Saskatchewan:
    - They started an organic community garden for students and faculty members living on campus. The university provides the land and water for the garden, allowing residents to grow their own organic food (Jacoby-Smith, 2007).

Reducing the EF: Efforts at UBC

UBC Food Services and AMSFBD are committed to building a sustainable food system on our campus and try to buy, prepare and serve food and beverage products by the most sustainable means available. UBC Food Services outlets are located at campus venues such as 99 Chairs, The Barn, Pacific Spirit Place, Place Vanier, Trek Express and Totem Park while the AMSFBD includes outlets at the SUB such as The Honor Roll, Blue Chip Cookies and Bernoulli's Bagel. Both UBC Food Services and AMSFBD are collaborating with the UBC Sustainability Office and are actively involved in some of the sustainable initiatives.

UBC Food Services and AMSFBD outlets are involved an ongoing pre and post consumer organic waste program in collaboration with the UBC Waste Management to reduce the quantity of solid matter and compost organic waste. The waste is composted in an in-vessel compost facility on campus and consequently transformed into fertilizer for UBC grounds. UBC Food Services also started to collect used cooking oil, which is converted into bio-diesel fuel to power landscape vehicles on campus (UBC Food Service, 2008).

Compostable takeout containers made of bamboo fiber and corn based are used instead of plastic and styrofoam in all the UBC Food Services outlets. Blue Chip has switched to compostable cups which are made of paper and have air injected paper cup covers. Bio-degradable food containers are offered at cost ($0.25) in the AMSFBD outlets in order to reduce the use of styrofoam take-out containers and plastic cutlery. Fair Trade coffee is served in all AMSFBD outlets and the UBC Food Services outlets (UBC Food Service, 2008). All of the coffee is 100% organic and shade grown. There is also a food container and mug discount given at UBC Food Service and AMSFBD outlets to reduce the use of paper cups, styrofoam take-out containers and plastic cutleries. Students are encouraged to bring their own containers by saving $0.25 on their purchase. A discount of $0.15 is offered on any hot beverage purchased when travel mugs are used. Moreover, AMSFBD offers Eco-card, which customers can use to receive a free coffee after purchasing ten coffees with their own mug.

UBC Food Services has started to procure some their produce from the UBC Farm. UBC Food Service has spent approximately $4,000 on UBC Farm produce annually. An example is Sage Bistro Restaurant, which started buying local produce such as herbs and salad greens from UBC Farm in the summer of 2003 (UBC Food Service, 2008). UBC Food Services and AMSFBD have been collaborating with academic programs such as the AGSC 450 project

to work toward developing a more sustainable food system. For the past three years, AGSC 450 students have made recommendations for UBC Food Service to improve the current food system as well as build opportunity to expand the collaboration of UBC Farm and UBC Food Services. For example, some of the 2007 UBC Food System Projects (UBCFSP) by AGSC 450 students incorporated local food into various outlets. Specific projects facilitated coordination of UBC Farm seasonal produce to create Bernoulli's Bagel's products using jalapeno and butternut squash in September 2007 (Group 10, 2007; Group 17, 2007).

The EF of various foods

The EF is a useful tool for measuring and communicating environmental impact and sustainable resource use (Chambers, N., et al., 2005). It measures how much bioproductive area (whether land or water) a population would require to sustainably produce all the resources consumed and to absorb the waste it generates using prevailing technology (Barrett, J., et al, 2002). Comparing the EF with the global availability of productive area gives an indicator of environmental sustainability (Chambers, N., et al, 2005). EF calculation involves collecting data from the resource flow analysis and other sources used in various activities such as gathering of raw materials, processing, packaging, transporting the final products to the wholesaler or retailer, and eventually to waste processing and final disposal (Barrett, J., et al, 2002). Larger footprints are usually associated with higher energy consumption and more carbon-intensive fuel sources for electricity, heating and transportation (Wilson, J & Anielski, M., 2005).

In general, food items can be categorized into milk and dairy products, meat products, vegetables and fruits products, bread and cereal products, and beverage products. These five categories have the following average EF (expressed in unit of ha/tonne) in a decreasing order: meat products (11.66), milk & dairy products (6.9), beverage products (6.67), bread & cereal

products (2.79), and vegetable & fruit products (1.14) (Barrett, J. et al., 2002). In summary, animal-based products are responsible for 77% of the total food EF, while plant-based products contribute approximately 23% of the total food EF (Wilson J. & Aneilski, M., 2005). The animal-based footprint is more than three times the plant-based footprint. This is best illustrated by the fact that more resources are needed to make a kilogram of beef than a kilogram of wheat.

Stakeholder Interviews

Nancy Toogood, AMS Food and Beverage Manager, January 31st, 2008

- She is the manager of 7 restaurants, 2 bars, catering, and the seasonal patio. She often works together with the AMS Impact Committee, AGSC students and teaching members, UBC Sustainability Office and SEEDS.

- She believes that lighter footprints should concern food security, less animal protein, less fossil fuel used in delivery, storage and in the food making process.

- The sustainability strategy within the AMS also applies to cleaning supplies. They use Ecolab products, which are fairly environmentally friendly.

- The coffees sold at the Blue Chip Cookies come from Canterbury, which is a local company. The coffee is fair-trade, certified and non-certified organic.

- In AMS ethical purchasing policy, AMS FBD also considers not just the environment sustainability but they also make sure that the sustainability in social and economic sense is also fulfilled. Although the process is time consuming, but they want to make sure that there is a global responsibility associated with the changes that are made.

- AMS FBD's top priority is customer satisfaction, but they realize that they cannot satisfy every customer. Profit is also a very important consideration, but they must also work with the framework of sustainability.

- It takes $1000 to make a unit of 3 kind of garbage bins (compost bins, plastic beans, paper bins), and she would like to put more in the SUB this year. However, hot summer days may cause odor issues and attract flies.

Bev Teh, Blue Chip Manager, March 3, 2008

- Blue Chip is a thriving business and they sell a large volume of goods daily

- Changing ingredients would be more feasible than introducing a new menu item. This could include more local or organic suppliers.

- The store already has limited production space.

- In the past Blue Chip has catered to customer demand (soy milk, fair trade coffee), but few people have asked for vegan goods.

- Customers are happy with current products, and price increases due to organic ingredients may not please customers. People tend to buy the same things every time.

- She wishes to develop a spice cookie, but has not had the time, and is open to suggestions

Nancy Toogood, AMS Food and Beverage Manager, March 19, 2008

- Saputo Fluids Division is the supplier for dairy products at Blue Chip. Not only is Saputo a local company, but it is also good for local economy.

- The disposable cups from Blue Chip Cookies are corn-based and compostable. Even though there are currently not a lot of compost stations at SUB, AMS FBD is working to increase compost stations and enhance the recycling program.

- AMSFBD strives to purchase food by the most sustainable means available, but they have to consider whether it is more sustainable to buy local or organic food from suppliers. Suppliers such as Central value local food, but they face problems during the winter growing season in Vancouver. There are a lot of administrative hassles dealing with local farms. Also, local foods may not be produced sustainably. For example, BC Hot House Tomato spends approximately $1000 for heating in the wintertime, which may be less sustainable than shipping organic tomatoes from California.

- Although mug and container discounts are offered at the AMS FBD outlets, customers rarely bring their own containers. She suggested that it is important to educate consumers and increase the awareness of mug and container discounts. She believed increasing washing stations at the SUB is a way to encourage people to bring their own containers.

- In order to determine the market potential of our developed vegan cookies, we had her sample our ginger spice and apple spice cookies. She liked both, but voiced more approval for the ginger cookie and requested the recipe. She hopes to make a batch to market during the summer.

Survey Results

We combined the survey results from our online survey and the on-site survey administered by Group 28. The surveys contained similar questions, and many of the results

correspond. Please refer to Appendix B for Group 15 raw data and please refer to Group 28 document for theirs.

When asked about the quality of the current products at Blue Chip, 41% of the respondents rated the products as “good.” When asked how often respondent will buy vegan baked goods if they are offered, the majority chose from the “sometimes”, “seldom” and “not interested” options – 30%, 37% and 25% respectively. However, vegan baked goods with berry ingredients are seen as the most favored. The two surveys also show that taste and price are the two most important qualities for consumers when choosing an item from Blue Chip. The on-site survey showed that 74% of the respondents are willing to pay 20-50 cents more for more environmentally friendly food options.

When asked what baked goods they would like to see at Blue Chip, respondents provided useful suggestions. Some to note include taro muffins, granola bars, vegan cupcakes and brownies, carob-based baked goods, and also ginger, cinnamon cookies and apple-sauce cookies.

We also asked for other suggestions to decrease the EF of Blue Chip. Many respondents mentioned a discount for bringing your own container, using post-consumer recycled products for packaging, using more milk alternatives (soy milk, almond milk), and using fair-trade and organic sugar and chocolate.

Although insightful, the combined survey result from our group and group 28 may be biased. The on-site survey has 147 respondents whereas the online survey has 279 respondents. From the total of 426 respondents, 83% are undergraduates, 67% are female and 66% are 19-24 years old. Furthermore, 426 respondents may not be a sufficient sample size to represent the entire community those who purchase food on campus.

Staff Tasting

Due to budget and time constraints, our group decided to conduct a tasting of vegan cookies with Blue Chip staff rather than regular customers. Two types of vegan cookies were offered to the staff by representative of our group: ginger spice and apple spice cookies. While they sampled the cookies, we asked questions to gauge the popularity of each cookie (See Appendix F for the complete list of questions and answers). Overall, the staff commented that they like the taste and appearance of both cookies.

91% of the staff liked the taste of our vegan cookies and 64% of them believed that these will have the potential to become popular as long as the marketing strategy is appropriate. For instance, they suggest not directly advertising the cookies as "vegan", but instead having an appealing name for the cookie. A smaller display can advertise the new product discretely or indirectly. For instance, a sign saying "Ask about our vegan baked goods" may be used to avoid intimidating the customers. 82% of the staff commented that they would personally promote the vegan cookies at work due to their exceptional taste and their lower EF. 82% of the staff also would buy vegan cookies if they were regular customers at Blue Chip.

Table 1: Alternate organic suppliers of sugar and flour

Suppliers	Organic Sugar	Organic Unbleached Flour
Biovia Wholesaler	$45.50 (20kg)	$44.95 (20kg)
Ladybug Organics	$4.47 (450g)	$8.97 (2.2kg) $29.97 (10kg)
Pro Organics	$52.00 (25kg)	$23.50 (10kg) $45.00 (20kg)
Discovery Island Organics	$44.00 (25kg)	$43.00 (20kg)
Tama Organics	$55.00 (20kg) $varies (55kg) $1.85 (lb)	$25.00 (10kg) $37.00 (20kg)
MacGillivray's Sugar	$33.50 (25kg) Normal sugar $20.50 (20kg)	N/A
Anita's Organic Flour	N/A	$47.50 (20kg)[a]
BLUE CHIP COOKIE	$11.65 (10kg) **NON-OGRANIC**	$11.60 (20kg) **NON-ORGANIC**

Discussion

Measures to reduce EF at Universities, Restaurants and UBC

There are many ways in which people can reduce their EF and the dependence on the natural resources. This includes reducing electricity usage in households or businesses, supporting locally grown foods instead of imported foods, choosing foods with a lower EF and choosing cleaner transportation methods (Flint, 2006). Our research focused on reducing EF by introducing food products that are made from lower footprint ingredients, which includes foods that require less transportation and resources for production and distribution. As mentioned earlier, food procurement, preparation and distribution constitutes a large proportion of the EF for individuals, businesses and institutions (Wackernagel and Rees, 1996). Our investigation of Universities and local Vancouver restaurants that practice EF lowering measures provided good examples to build upon the programs currently in place at UBC.

A common theme between local restaurants and Universities included procurement of food from local sources. This is approached directly by acquiring food from local farmers, or indirectly by purchasing from suppliers and grocery stores. In either case, a decreased reliance on imported foods will translate into fewer miles the food has to travel from farm to plate. However, there are additional advantages to buying locally. This allows local farmers to obtain more of the food dollar, it benefits the local economy, and it allows individuals more access to locally-produced fresh food. Both the provider and the consumer gain knowledge about the community of local growers and a taste for their regional foods.

However, there are also many limits to local food procurement. The first involves volume. Depending on the size of the consumer group, providers may not be able to maintain an entirely local menu. Often, the farms close to urban areas are not large enough to provide for a large population (Halweil and Nierenberg, 2007), which is the case at many universities.

Restaurants are less affected by this limitation because they may serve less than 500 individuals daily, while some universities may serve over 20,000. The second issue is seasonality. Depending on the region and length of growing season, the variety of local foods available may severely decrease during the winter months. This will limit the menu at any type of food venue. There are also issues of quality, reliability of crops due to weather patterns and the hassle that may arise from dealing with multiple small scale suppliers.

Still, many restaurants and universities have risen to the challenge of local food procurement. Universities direct local food to specific outlets with appropriate customer volumes, and will often bring food production closer to home through small scale student run farm programs. Restaurants and universities alike have developed seasonal menus, and will offset menu shortages with imported goods.

Other initiatives to reduce the EF of food include reduction of post consumer waste and an increased used of organic products. As for waste, compost programs, biodegradable containers and 'bring your own' take away container campaigns all aim to achieve this goal. Incentives to reduce waste and options of 'greener' containers help to achieve customer support. On the other hand, the use of organics helps to reduce ecological impact much earlier in the system. Synthetic fertilizers, pesticides and herbicides all contribute to agricultural wastes that persist in the soil and water. These inputs have long term negative effects on innumerable ecological factors, including the productivity of the land and oceans, disruption of the mineral balance in soils and the persistence of agricultural chemicals in higher trophic organisms. Although the cost of organic ingredients may be more on paper, many restaurants and universities recognize the hidden ecological costs of conventional production methods.

UBC has begun to tackle many of the above issues, and will hopefully continue to establish more policies and programs that include local seasonal foods, composting, reduced post consumer waste and increased consumer involvement with the farming community. However, the actions taken at universities like UBC stand apart from efforts of the restaurant industry. Unlike universities, restaurants are largely focused on food production and distribution. Universities often consider food distribution a secondary concern, and a focus on the food system may be reserved for individuals in the agricultural or nutritional field. So by taking widespread action, universities broadcast a strong message that an interest in the ecological impact of food is not just for those in the food industry. Universities are accredited bodies that generate much of the global scientific research, and may serve as a model for sustainable living. Through personal practice and a growing body of data, they have a strong position to influence consumption patterns both locally and globally. For this reason, it is important that UBC takes further efforts towards reducing the EF of food venues on campus.

Stakeholder consultation

The early interview with Blue Chip manager Bev Teh brought forth many unexpected details that were very helpful to guide the direction of our project. She was very happy with the achievements of her business, including their popularity and the introduction of compostable cups and free trade coffee. However, she brought up the fact that most customers were already satisfied with the selection of baked goods available at Blue Chip, and may be resistant to changes. Upon reflection, our group realized the importance of this statement as each of us has a routine, including purchasing patterns that may be very hard to change. Moreover, the current menu already contains a variety of items and the idea of introducing a new vegan item may lead

to the elimination of a less novel item. The alternative is to use plant-based substitutes for animal-based products in the current recipes, which could lead to many customer complaints.

Blue Chip is a business with a solid customer base, and they are prospering economically. For this reason, any change in production must have solid reasoning, and new menu items must be above the ordinary product. We chose to evaluate two pathways to lower the EF of the food they produce, each with separate target areas. One involves changing suppliers to include more organic and or local ingredients. For this approach, the recipes will remain unchanged and customers can enjoy the same (if not better) quality and taste of Blue Chip products. The other pathway involves developing a novel vegan product based on Teh's comments. She wishes to develop a spice cookie, which will be new to the current Blue Chip menu. Our two products are chocolate free, with addition of spices such as ginger, cinnamon and cloves to give a distinct flavor apart from the current menu items. Those two products are also attractive to those who are looking for a cholesterol free alternative or a spicy compliment to their tea or coffee. Both approaches to lower the EF of menu items at Blue Chip will maintain customer satisfaction, and can ideally be implemented together.

Product Development

The goals of introducing and developing vegan spice cookies for Blue Chip are to lighten the EF of the current menu items and to provide more desirable options for consumers. Both cookies we proposed are free of dairy and eggs, which provide an alternative for vegan customers or individuals who are allergic to dairy and egg. In substitutions for the major ingredients such as egg, butter and milk that used in making cookies, vegan cookies use vegetable oils, molasses and various fruits to replace the wet ingredients.

Sample testing for both types of cookies was successful and we had many positive feedbacks from the staffs and Nancy Toogood. The ginger spice cookie was the most popular choice among both groups, and Toogood has forwarded the recipe for development in the upcoming summer. This weakens the taboo among many consumers that vegan goods lack taste, and are inferior to conventional products. However, the use of spice contributes to the strong flavor, and canola oil and molasses provide a moist texture that is reminiscent of butter containing products.

Survey Results

According to the survey results, the majority of consumers in the UBC community will choose quality and price over locally produced and vegan choices as their selection criteria. This indicates that respondents may not care, or may be ignorant of the impact their food choices make on the environment. It is clear that some form of consumer education is lacking in this field, but recent media highlights on the environmental health could improve this in the future. Still, food venues such as Blue Chip have the ability to provide ecologically responsible goods, and can do so successfully. Although it may be difficult to maintain the price, the quality of goods should not vary a lot when using ingredients with a lower EF. In fact, some may consider this a value added ingredient. Moreover, vegan options have other good qualities that can be marketed to the growing number of health conscious consumers. They are cholesterol free, and are often low in total fat and/or saturated fats (See Appendix D).

Unfortunately, many respondents were unaware of the current ecologically friendly initiatives at Blue Chip. When asked to provide ideas for lowering EF for Blue Chip, many listed off initiatives that are currently in place, such as the compostable cups, mug campaign and eco-cards. Therefore, we believe that Blue Chip should take a stronger stance towards consumer

education. Promotional advertisements are one way to achieve this in a busy venue, and we have created two sample displays (Appendix C and D). We will discuss more on this issue in the promotion section.

Alternative Suppliers

Interviews with Toogood and Teh gave conflicting opinions when it comes to changing the suppliers for Blue Chip. In order to reduce the EF of Blue Chip, Teh suggested that switching to local and/or organic suppliers would be more feasible than changing existing recipes and introducing new products. However, at a later date, Toogood expressed the difficulty that may arise from switching suppliers. She pointed out that they have kept the same suppliers for many years, and it may be more feasible to establish a negotiation. In this way, AMS venues could maintain the same supplier, but the supplier would offer a larger variety of local and organically grown goods.

Nonetheless, we investigated the current origin of Blue Chip ingredients. To our surprise, the dairy products came largely from local suppliers. For this reason, we focused on alternate suppliers for flour and sugar, the two major ingredients used by Blue Chip. Both ingredients do not grow well, if at all, in British Columbia; therefore, local sourcing of these two ingredients will not be feasible. However, there are many suppliers of organic flour and sugar in the Vancouver area, which would also meet the lower EF requirement. As expected, the prices are higher compare to the prices from the current suppliers. Therefore, if Blue Chip wishes to lower the food EF using organic ingredients, they should expect to raise the prices of their products. This will not be popular with their current customer base unless the consumers undergo a significant change in purchasing ethics. Customers will not be content to pay a higher

price for organic goods until they realize the full ecologic impact of conventional production methods.

Promotion

Promotion is needed to increase customers' awareness on current programs at Blue Chip to help reducing the food EF. Their current displays for ecological initiatives are lacking, and do not draw customer attention. The $0.25 cash discount is not made obvious at Blue Chip and many customers are unaware of it. Also, many do not know that their disposable cups are compostable, and will throw them in the trash. Therefore, we developed two promotional ads that can be easily placed within the Blue Chip venue (See Appendix C). Promotions such as these will increase customer awareness, and in the best case will motivate consumers to take part in the waste-reduction programs at Blue Chip. This is especially true if customers know that they can save. Alternatively, a separate card or pamphlet with information on ways that Blue Chip uses to lower EF can be made available for read while customers wait in line.

The vegan options may be promoted as a new product at Blue Chips. However, survey results and consultation with the staff indicated that direct promotion of vegan products would hurt sales. Clearly, there is a current misconception that vegan baked goods are lower in taste quality. For this reason, naming the cookies based on the ingredients used or giving them a creative name may be a better approach to introducing the vegan baked goods. A sign reading "Ask us about our vegan options" should also be made to attract customers who are more accepting towards vegan baked goods.

From a health perspective, we can promote the benefits of vegan baked goods over the regular selection. For instance, vegan baked goods contain less saturated fatty acids and are

cholesterol free, which is good for heart health. We conducted a nutritional analysis for the vegan ginger spice cookie to support these claims (See Appendix E).

Recommendations

- For AGSC 450 classes
  - Follow up with the stakeholders such as Nancy and Bev to find out the trend of consumers' interest for low EF baked-goods.
  - Concentrate on a project to increase awareness on campus about food EF.
  - Follow up with Blue Chip to see customers' response to the vegan ginger spice cookies during the one-week trial sale, which will most likely take place in summer of 2008.

- For Blue Chip Cookies:
  - If the trend towards purchasing low EF baked goods increases, the ingredients used in their current recipes may be changed or new products can be introduced at Blue Chip Cookies. Some possible changes can be made in the ingredients are:
    - Decrease the amount of animal-based ingredients at the outlet by using plant-based substitutes (i.e. vegetable oil, plant-based margarine) or introducing more vegan baked goods.
    - Use more of the locally produced ingredients
  - Increase promotions and awareness of the initiatives that Blue Chip Cookies and AMS have taken to decrease their EF through a poster campaign.
    - Promotions should emphasize on the immediate benefit to the customers such as cash discounts in addition to the long- term environmental benefits.
  - Provide nutrition facts about the vegan baked goods in the storefront to attract more customers.

- For AMS Food and Beverage:
  - Collaborate with UBC Waste Management to provide more compost bins in the SUB.
  - Ensure that all the food outlets are using bio-degradable/ or reusable containers.

- For UBC waste management:
  - Ensure easy access to a compost bin on campus (especially in areas where food outlets are located).
  - Expand the capacity of the compose site at UBC farm so waste generated on campus can be composed locally.

Conclusion

Our group recognizes that universities have the potential to influence consumption patterns both locally and globally and serve as a model for sustainable living. Our investigation

focused on ways to apply the AMS Lighter Footprint Strategy to food venues such as Blue Chip. We aimed to explore and provide feasible and realistic initiatives to lighten the food EF at Blue Chip Cookies, which included developing alternative menu items. Our recommendations present proposals for a new cookie recipe and promotions to increase awareness for ways to further reduce the EF at Blue Chip. It is our hope that those proposals will be implemented successfully at Blue Chip in the future through customer support. In addition, we would like to see further collaboration with AMSFBD and UBC Waste Management in development of a wider-spread composting program. Ultimately, we hope that Blue Chip can serve as a model for other AMSFBD outlets to implement the AMS Lighter Footprint Strategy and make the UBC campus more sustainable.

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Appendix A: Product Recipes

Ginger spice cookies	Instructions:
4 tbs coarse sugar 2 c flour 1 tsp baking soda ¼ tsp salt 2 ½ tsp ground ginger ½ tsp ground cinnamon ½ tsp ground cloves ½ c canola oil ¼ c molasses ¼ c soy milk 1 c granulated sugar 1 tsp vanilla	• Preheat the oven to 350º F • In a large bowl, sift together all of the dry ingredients except for the sugars • In a smaller bowl, combine all the wet ingredients and the granulated sugar until well blended • Fold the wet ingredients into the dry ingredients • Place rounded heaping tablespoons of dough onto a greased cookie sheet, and flatten slightly with the back of a spoon • Sprinkle the coarse sugar on the top of the cookies and flatten again with the spoon • Bake for ~10 minutes until the bottoms are golden

Apple-spice cookies	Instructions:
2 1/2 cups flour 2 tsp baking soda 2 tsp cinnamon 2 tsp cloves 2 tsp ginger powder 2 tsp allspice 1 cup margarine 1 ¾ cups brown sugar ½ cup apple sauce	• Preheat oven to 375ºF • In a large bowl, sift together flour, baking soda, and spices • In a separate bowl, cream brown sugar and margarine on a medium speed until light and fluffy • Add applesauce to the wet mixture and mix at high speed until well-combined • Add the dry ingredients in two parts, stirring well after each addition • Chill the dough for an hour • Form balls (of any size) from the dough and place on a greased or lined cookie sheet, two inches apart • Bake for 8-12 minutes, or until the edges are browned.

Appendix B: Survey Results

1: What is your affiliation with UBC?

Type of Affiliation	Responses
Undergraduate	250
Grad	10
faculty/staff	2
Visitor	8
Other	9

2: What is your gender?

Gender	Responses
Male	88
Female	189
Other	2

3: What is your age?

Age	Responses
18 and under	42
19-24	200
25-31	26
33-55	6
56 and over	1

4: How often do you visit Blue Chip?

Visit	Responses
v. often	5
Often	24
Sometimes	56
Seldom	140
Never	54

5: How would you rate the selection at Blue Chip?

Quality	Responses
excellent	22
very good	85
good	104
fair	51
poor	4

6: If Blue Chip began offering a selection of vegan baked goods, how often would you buy them?

Frequency	Responses
very often	6
Often	18
sometimes	85
Seldom	103
not interested	70

7: The following is a list of possible vegan products. Out of these options, which would you prefer? (More than 1 response is allowed)

Type of vegan baked goods	Responses
Pumpkin muffin	87
Carrot muffin	99
Zucchini muffin	79
Berry muffin	156
Seasonal fruit muffin	130
Pumpkin spice cookies	80

8: Is there any other vegan products that you would like to see at Blue Chip that is not listed from the previous question?

Cookies: ginger-spice, cinnamon, green tea, apple cinnamon, carob chip, low sugar and low fat cookies, peanut butter

Muffin: passion fruit, green apple, taro, yam

Other baked goods: vegan brownies, chocolate items (buns/ rolls), wheat free (spelt, kamut and rice), no hydrogenated oils, whole grain, granola bars, gluten-free, cinnamon buns, vegan chips, vegan cupcakes, strawberry cookies, apple crumble pie

9. When buying a product from Blue Chip, which qualities do you consider being important?

Qualities	Index*
Taste	240
Price	211
Appearance	160
Low Fat	162
Locally Produced	145

*Please refer to survey discussion for calculating index values.

10: Other suggestions for decreasing the ecological footprint at Blue Chip?

Discount for large items and for bringing own container; rice, hemp or almond milk; honey as local sweetener; fair trade, organic sugar and chocolate; sell cookie dough; round up bills to a round figure and donate the difference to environmental causes; use post consumer recycled products; use recyclable materials for packaging; charge a few cents to research.

Appendix C: Promotional Advertisements

Appendix D: Nutritional Analysis of Vegan Ginger Spice Cookies

Nutrition Facts

Serving Size (778g)

Amount Per Serving

Calories 3090 Calories from Fat 1020

	% Daily Value*
Total Fat 114g	175%
Saturated Fat 9g	45%
Cholesterol 0mg	0%
Sodium 1910mg	79%
Total Carbohydrate 499g	166%
Dietary Fiber 8g	34%
Sugars 286g	
Protein 28g	

Vitamin A 2% • Vitamin C 2%

Calcium 80% • Iron 150%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9 • Carbohydrate 4 • Protein 4

Figure 1: Nutrition facts for a batch of ginger spice cookies. Divide amounts by 28 to get the nutritional facts for a single serving size.

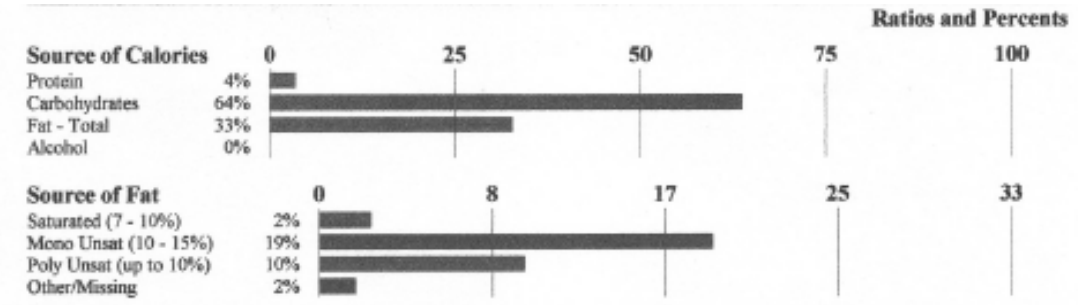

Figure 2: Macronutrient details of the ginger spice cookie.

Appendix E: Blue Chip Staff Tasting Survey Result

1. Do you like the taste of the cookies?

	Responses	%
YES	10	91
NO	1	9
TOTAL	11	100

2. Do you like the appearance of the cookies?

	Responses	%
YES	11	100
NO	0	0
TOTAL	11	100

3. Based on your experience, do you think the vegan cookies have the potential to become popular?

	Responses	%
YES	7	64
NOT SURE	3	27
NO	1	9
TOTAL	11	100

4. Would you personally promote the vegan cookies at work?

	Responses	%
YES	9	82
NO	2	18
TOTAL	11	100

5. Have any customers that you encountered before asked you about vegan cookies?

	Responses	%
YES	6	55
NO	5	45
TOTAL	11	100

6. Would you buy vegan cookies at Blue Chip if you were one of the regular customers?

	Responses	%
YES	9	82
NO	2	18
TOTAL	11	100