

**Exploring Ways to Lighten AMS Food and Beverage Department's Ecological Footprint:**

**Blue Chip Cookies**

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AGSC 450

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

Scenario 2 Group 10

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## 1. Abstract

Globally, the over consumption of animal products, unsustainable farming practices, and excessive transportation and packaging have resulted in a food system that has an immensely detrimental effect on the environment and that cannot be sustained. The University of British Columbia started the Food System Project, an ongoing collaborative research project involving several key stakeholders, in order to make their own food system more sustainable and to create a food system model that will positively influence the global food system. This paper specifically looks at reducing the ecological footprint of the Alma Matter Society's Food and Beverage Department outlet, Blue Chip Cookies through the creation of a lower footprint menu item. Primary research in the form of a survey and taste test as well as secondary sources in the form of literature reviews were utilized for this study. To tackle this issue, our group created a vegan breakfast bar that incorporates local British Columbia produce. Based on a taste test, survey and cost analysis we determined that our breakfast bar would be well received by Blue Chip Cookies customers. In order to increase awareness of the new product and educate people about the importance of reducing their ecological footprint, a marketing strategy and informative pamphlets were created. We also did market research and found that the product was more likely to appeal to the general public if it was advertised as *a low ecological footprint* product, rather than *vegan*.

## TABLE OF CONTENTS

<b>2. Introduction</b> .....	4
<b>2.1 Problem Definition</b> .....	4
<b>2.2 Group reflections on the vision statement</b> .....	5
<b>3. Methodology</b> .....	7
<b>3.2 Consumer Awareness</b> .....	8
<b>4. Findings and Discussion</b> .....	9
<b>4.1 Ecological Footprint of Various Countries</b> .....	9
<b>4.2 Calculating Ecological Footprint</b> .....	10
<b>4.3 Reducing the Ecological Footprint: Initiatives from other universities</b> .....	11
<b>4.3.1 John Hopkins University</b> .....	12
<b>4.3.2 University of New Hampshire</b> .....	13
<b>4.3.3 Charles Sturt University</b> .....	14
<b>4.4 Reducing the Ecological Footprint: Web-based Initiatives</b> .....	15
<b>4.5 Stakeholder Consultation</b> .....	16
<b>4.5.1 Consultation with Blue Chip Cookies' Manager:</b> .....	16
<b>4.5.2 Consultation with Local Producers:</b> .....	17
<b>4.6 Product Development: Blueberry Chocolate Breakfast Bar</b> .....	18
<b>4.6 Survey Results: Taste test of the Blueberry Chocolate Breakfast Bar</b> .....	20
<b>5. Recommendations</b> .....	21
<b>6. Conclusion</b> .....	23
<b>7. References</b> .....	24
<b>8. Appendix</b> .....	26

## **2. INTRODUCTION**

This paper outlines the methods, findings, and recommendations that a small group of students from the Faculty of Land and Food Systems at the University of British Columbia developed to lighten the ecological footprint of UBC's Alma Mater Society's Food and Beverage Department (AMSFBD) food outlet, Blue Chip Cookies (BCC). The body of the paper is divided in five main sections: first, we start with an introduction to the paper by defining the problem, and discussing our value assumptions and vision statement; second, we describe our methodology; third, we report and discuss our findings; fourth, we make recommendations for future AGSC 450 students and UBC Food System Project collaborators; and lastly, we conclude our paper.

### **2.1 PROBLEM DEFINITION**

The earth's carrying capacity is being overwhelmed by an increasing demand for food, fibre and energy. Tragically, this causes serious degradation to the ecosystem in which our natural resources rely on; leading to further intensification and increased degradation (Alteri, 2008). Human consumption of natural resources now exceeds the planet's ability to regenerate by 30 percent (Global Footprint Network, 2008). Our food choices have large negative ramifications on the environment (Worldwatch Institute, 2004); excessive meat consumption, conventional production, transportation, packaging, and processing causes water pollution, water scarcity, deforestation, soil erosion, and a dramatic increase in the rate of climate change (Horrihan, Lawrence, and Walker, 2002).

In order to determine the impact of human consumption on the environment, Wackernagal and Rees (1998) developed the Ecological Footprint (EF). This is an analysis tool

that estimates the amounts of productive land an individual or population uses in terms of resource consumption and waste production (Wackernagal and Rees, 1998). The planet has only 2.1 hectares of nature available to meet the needs of each person (WWF, 2005), yet the global average is 2.8 hectares; Vancouver has an average of 7.71 hectares per person (Wilson & Anielski, 2005), and Canada as a whole has an average of 8.56 hectares per person (EFN, 2004).

Universities are powerful institutions that have the ability to shape the world's values and cultural practices, yet for several decades they have remained disconnected from the greater whole of society (M'Gonigle & Stark, 2006). In this global crisis, universities need to step up as leaders and model sustainable practices for the rest of the world. This is exactly the aim of the UBC Food System Project (UBCFSP), which tackles key environmental issues, including reducing the ecological footprint in the context of the University of British Columbia's (UBC) food system.

Our group was assigned scenario two, which explores ways to lighten the AMSFBD's ecological footprint. We chose to create a lower ecological footprint menu item for BCC, which is located on the main concourse of the Student Union Building (SUB) due to its popularity among students and current lack of vegan and local menu items (AGSC 450, Group 15, 2008).

## **2.2 GROUP REFLECTIONS ON THE VISION STATEMENT**

Our group approached this Food System Project from a research paradigm similar to that of a modern weak anthropocentric, as explained by William Murdy (2004). We view our own species as superior, and prioritize the earth's natural resources accordingly. However, we also realize that environmental degradation harms our own survival, and that nature has intrinsic

value beyond sustaining humans. We feel a responsibility to minimize humanity's ecological footprint, through both technology and lifestyle change, with the goal of sustainable living that will allow for a balance between humans and nature.

We agree with the UBCFSP Vision Statement as an ideal and something to strive for; however, we feel that the guiding principles need to be slightly modified, with an emphasis on policy, in order to reflect the challenges of incorporating the principles into a real world setting.

**Below are our group ideas concerning the seven principles of the Vision Statement:**

**1. Food is locally grown, produced and processed, *when possible***

We found that it is not feasible for UBC food system to carry only local products, given its need to provide ethnically diverse and affordable foods, the needs of the businesses to be economically and socially sustainable, and the current production capabilities of BC. However, we feel local eating is a very important aspect of a sustainable food system, and think policy should be put in place that requires food outlets to source a feasible level of food locally.

**2. Waste must be recycled or composted locally *and waste production should be instated***

Purchasing and consumer behaviour should be influenced through policy to minimize waste.

**3. Food is ethnically diverse, affordable, safe and nutritious**

**4. Providers and educators promote awareness among consumers about cultivation,**

**processing, ingredients and nutrition**

Education and awareness was considered by our group to be the most important guiding principle due to the key role it plays in making the other principles a reality. However, students and UBC community members are largely unaware of the sustainability initiatives currently taking place at UBC, and lack practical knowledge regarding ways to lighten their ecological footprints (AGSC 450, Group 28, 2008). We feel this principle needs to clearly define who "providers" and "educators" are so that greater accountability can be ensured in the future.

**5. Food brings people together and enhances community**

## **6. Food is produced by socially, ecologically conscious producers**

Policies should be set in place to ensure that the standards involved in sustainable agriculture, including both plant and animal production, are clearly defined and upheld.

## **7. Providers and growers pay and receive fair prices**

### **3. METHODOLOGY**

Preliminary research was conducted primarily through reviewing available resources on Vista. This information composed of current initiatives by the AMSFBD, UBC Sustainability Office, previous AGSC 450 student's research papers, and information on the initiatives other universities have taken to reduce their EF. Our group paid particular attention to the report written by group 15 of AGSC 450's 2008 class. Their report contains information about measures taken by BCC, their implementation plans and their recommendation to future AGSC 450 students (AGSC 450, Group 15, 2008).

#### **3.1 Lighter Ecological Footprint: Food Product Development**

Scenario 2's objective is to reduce the EFs of the food vendors of the AMSFBD; our group chose to work with BCC because the majority of their existing products contain butter and eggs. These animal-based ingredients have a higher EF in comparison to plant-based alternatives. As one of the recommendations from group 15 of 2008, whose effort was also on changing the EF at BCC, we followed up on the sales of the vegan ginger spice cookie they developed. We consulted with Bev Teh, the manager at BCC, to get her opinions on what she would like us to do to help reduce their EF. We also communicated with many stakeholders including: Nancy



Toogood (manager of AMS Food and Beverage Department), Liz Ferris (Director of UBC Sustainability Office), Amy Frye and Mark Bomford (both operators at UBC farm).

We obtained information about the availability and feasibility of incorporating local produce into the products offered at BCC. From there, we determined whether it was feasible for us to develop a new product or if it was more practical to change the ingredients of the existing products. The challenges of the former are to develop a recipe that is delicious and affordable, able to hold together well without butter, has a lighter EF, and was minimally affected by seasonality. The latter option has the potential of compromising the texture and the taste of their existing products, which we decided would be more difficult to accomplish. Therefore, we explored recipes that would include vegan ingredients and local produce. Our group developed a vegan product called the Blueberry Chocolate Breakfast Bar that was agreed upon among our group members as fulfilling Bev Teh's product criteria. We then conducted a taste test outside of BCC where we had some of the customers and passers-by complete a product survey. The questions in the survey included not only the likeability of the product, but also questions to determine if consumers at UBC were aware of the concept of an EF (See Appendix). The obtained results serve as an indication of the potential viability of including the breakfast bar in the BCC menu.

### **3.2 CONSUMER AWARENESS**

In addition to developing a lighter EF product for BCC, another objective was to educate their customers by being more aware of the concept of an EF and to make more responsible food choices. One group members developed a comprehensive and eye-catching pamphlet containing

information about the benefits of eating locally, organically, and animal free products (see appendix). Our group agreed that it would be more effective if there was an emphasis on food choices with a lower EF rather than to convince customers to make vegan choices; as a previous AGSC 450 group's survey indicated that students tend to be deterred from buying vegan goods (AGSC 450, Group 15, 2008). Aside from following a vegan diet, there are other actions that one can take in developing a more sustainable food system such as eating organically and local. By distributing the pamphlet throughout the UBC, our group hopes that the educational materials will influence the purchasing behaviours of customers at other AMSFBD vendors as well.

## **4. FINDINGS AND DISCUSSION**

### **4.1 ECOLOGICAL FOOTPRINT OF VARIOUS COUNTRIES**

The Ecological footprint is a comparable measure between human demand on nature and the ability of the biosphere to generate resources to meet those demands. The EF provides quantitative analysis of human demand on nature's resources such as energy, biomass, building material and water, which are converted to normalized measures of land area called global hectares (gha). The EF is now widely used as an important indicator to a country's environmental sustainability as human footprints continue to take over the earth's available biological carrying capacity. Shown on the next page is a table of the per capita EF from selected countries.

### Average Footprint per Capita from Various Countries

<b>Country</b>	<b>Ecological Footprint(hectares/person/yr)</b>
United States	9.57
<b>Canada</b>	<b>8.56</b>
France	5.74
United Kingdom	4.72
El Salvador	1.72
Vietnam	0.76

Data from the Ecological Footprint of Nations (2004) ctd'n Ecological Footprints from Around the World, 2006

In 2005, the World Wide Fund for Nature (WWF) calculated that in a world of six billion people, the available biocapacity (available supply of natural resources) at the time was about 2.1 global hectares per person. From the above table some of the largest countries' ecological footprint exceeds four to five times the world's biocapacity limit. The WWF estimated that the ecological footprint of the world population is now exceeding more than twenty percent of the world's biocapacity (WWF, 2005).

#### **4.2 CALCULATING ECOLOGICAL FOOTPRINT**

In developing a lower EF food item, we looked into the EF of various food products in order to create a product that will have the greatest impact in preserving the world's biocapacity. Our group first analyzed each food group's EF per year per kilogram. The table below shows the EF of some general food groups and from our findings we can see that animal products have the highest EF whereas the EFs of fruits and grains are the lowest. Raising livestock for food results in major environmental destruction such as water contamination, land degradation, loss of biodiversity and climate change (Vegan outreach, 2009). The livestock sector is responsible for

more than twenty percent of green gas emission which significantly contributes to global warming and ecosystem acidification (Vegan outreach, 2009). It also takes more land, water, and energy to produce meat than to grow vegetarian foods due to the vast amount of fossil energy required to produce animal feed (Vegan outreach, 2009).

Ecological Footprint of some food groups:

Food Group	Area Consumed
Meat and poultry	0.0069ha-yr/kg
Seafood	0.0045ha-yr/kg
Dairy	0.0011ha-yr/kg
Fruits	0.0005 ha-yr/kg
Vegetables	0.0004ha-yr/kg

Data from the Kwantlen University/College cafeterias in Surrey, Langley, and Richmond in 2005 from Compass Group ctd'n Burgess & Lai, 2006

From the data above, it is evident that Canadians have rooms for improvement on reducing their EFs. It is also obvious that a plant-based diet would help in reducing the EF from food products. Therefore, our group decided to develop a new product that would contain no animal products. By eliminating meat and dairy ingredients, we significantly reduce EF of a BCC product by 0.008ha-yr/kg based on the above data.

**4.3 REDUCING THE ECOLOGICAL FOOTPRINT: INITIATIVES FROM OTHER UNIVERSITIES**

Education can significantly influence one's perspective. In order to better educate people on issues of environmental sustainability and food security, schools play a significant role in delivering knowledge and concepts to students that are not yet informed about our collapsing ecological system and the ramifications of conventional agriculture. Here are some universities aside from UBC that are taking initiatives in helping to develop a more sustainable world:

#### ***4.3.1 JOHN HOPKINS UNIVERSITY***

The main food outlet at John Hopkins University (JHU), John Hopkins Dining has taken some measures to reduce its EF. The university's food management sources most of its produce and ingredients from local producers. The seasonal herb garden in front of one of the vendors supplies the herbs to the dining service. The eggs are free range and the milk served is free of artificial growth hormones and antibiotics. They serve only dolphin-safe tuna, the tuna harvested without harming the dolphin population (Monterey Bay Aquarium, 2008), and seafood recommended by the Monterey Bay Aquarium Seafood Watch Program. The "No Veal Served Here" policy prohibits the serving of veal. Other measures include providing paper bags instead of plastic bags, using biodegradable and recyclable to-go containers, water saving devices in use for all facilities, and energy-saving devices for the vending machines. The tray-less serving policy saves around 66,000 gallons of water per year that would have been used to wash the trays. Without a tray, the students are less likely to take more food than they are able to eat, which is estimated to reduce food waste by 75,000 pounds per year. Partnered with the John Hopkins Centre for a Liveable Future, its food footprint program supplies information about the resources required to grow each food item. The goal of this program is to provide the customers with information about how their food choices impact the environment so they can make responsible choices without dictating to them exactly what to eat. Not only does the dining service support the "Meatless Monday" campaign, it always provides a daily selection of Vegetarian entrees (JHU Dining, 2009).

### Other initiatives from JUH:

- Electronic hardware recycling
- Battery recycling
- More energy efficient lighting
- Energy consumption analysis of the school's mechanical and electrical systems
- Deal with office Depot offering same price for green top paper (35% post-consumer recycled) as red top paper (10% post-consumer recycled)
- Soy inks for JH Public Health magazine
- Green-e certification for print materials
- Implementing green roofs
- Managing storm water runoff
- Engaging students through education and competition

Since 2001, these initiatives have reduced 13% of greenhouse emission, 32 % of air pollutants, 17% in solid waste and water pollution, and 35% trees for paper production (JUHPH-ESC, 2009).

### ***4.3.2 UNIVERSITY OF NEW HAMPSHIRE***

Through the Local Harvest Initiative and the office of sustainability, the University of New Hampshire (UNH) Dining service strives to maximize its serving of organic, locally produced and processed sustainable food. Some of its United States Department of Agriculture certified organic items include the vegetables from the UNH Organic Garden Club, yogurt from Stonyfield Farm, and bread from the Abigail's Bakery. The eggs served at these food outlets meet the standards of the Humane Animal Care Program, which excludes the practices of food

production through antibiotics, hormones, and inhuman treatment or space constraints. Fair Trade certified coffee can be found at some of the vendors including Green Mountain and Omar coffee.

To minimize waste production through dining, the dining halls use china and flatware that are either recyclable or biodegradable. Discounts are available for individuals who bring their own mugs, which are also distributed for free to freshmen. The UNH Compost Program allocates food pulpers in the dining hall that facilitate composting through pulverization and extraction of liquid. Food waste is composted at the Kingman Farm and used by the Organic Garden Club (UNH Sustainability, 2009).

#### Other initiatives from UNH

- Energy Star equipment for the dining service
- Low-flow tap
- More efficient lighting
- Air-cooled refrigeration exclusively
- Non-caustic washing chemicals
- Efficient dishwasher reducing at least 60% of water used
- 17 waterless urinals saving an estimated 765,000 water per year and \$20,000 in water and sewer cost

(UNH Sustainability, 2009)

#### **4.3.3 CHARLES STURT UNIVERSITY**

Charles Sturt University (CSU) has set some ambitious goals in its effort to reduce its ecological footprint. It aims to become greenhouse neutral by 2015 and reduce 25% of its water

use compared to 2006. They also aim to reduce energy consumption by 10% by 2011 and 25% by 2015, increase its biodiversity by 20% by 2015, and become a zero-waste university by 2011. Several projects are underway to help achieving these goals. Upgrading to greener buildings appears to be its primary focus. For example, heating is switched from a coal-fired water heating plant to a gas fired plant. Some hardware is designed to help counter the fluctuating seasonal temperature. There is campus wide paper recycling and extensive use of 100% recycled paper. The dry toilets require no water and effectively compost human sewage. They are using native reeds for water treatment in their artificial wetlands as part of the strategy for grey water recycling. Irrigation at the gardens and lawns are satellite controlled. There are also extensive planting of trees and shrubs to restore wildlife habitats and reduce carbon emission (CSU News, 2007).

#### **4.4 REDUCING THE ECOLOGICAL FOOTPRINT: WEB-BASED INITIATIVES**

Environmental sustainability is a growing concern worldwide. In addition to universities, the government and organizations are sending out important messages to citizens around the world to initiate actions to reduce environmental pollution; where these messages can be most accessible to the public through the internet.

##### **EcoEarth.Info - Environment Portal & Search Engine**

This website (see appendix) provides updated environmental news from every part of the world. Its goal is to empower the environmental sustainability movement among citizens by alerting readers of issues concerning environmental destruction. EcoEarth is a place where readers can familiarize themselves with environmental issues worldwide and helps to raise



awareness among the public by providing a blog space for individual comments. For example, the website contains news about government initiatives and contracts, environmental organization action plans, and facts regarding ongoing deterioration of the world's natural resources.

### **Vegan Outreach -**

Vegan Outreach (see appendix) explains the benefits of following a vegan diet. It displays strong opinions for animal welfare by providing evidence of cruel animal slaughter for human food production. According to this website, eating animals will cause major environmental destructions that result in loss of biocapacity and imbalance of our ecosystem. It takes more energy and more land to produce the fossil fuel required for production of animal feeds, which in turn result in more waste generation and land contamination (Vegan outreach, 2009). Harper, in 2006, indicated that for every American that becomes a vegetarian, 1 acre of trees and 1.1 million gallons of water are saved each year (Harper, 1995).

## **4.5 STAKEHOLDER CONSULTATION**

### ***4.5.1 CONSULTATION WITH BLUE CHIP COOKIES' MANAGER:***

The first step we took in our project was to follow up on the ginger spice cookie developed in 2008 by group 15. During our interview with the BCC Manager, Bev Teh, she revealed that the cookie was not selling well and the batter was difficult to work with. She also stressed that the potentially new product has to be vegan –she was interested in more vegan products. Since BCC has limited space, Bev Teh emphasized that if a new product were to be developed, it needed to be affordable, profitable, and tasty (B. Teh, Personal Communication,

March 10, 2009). The challenge for our group was then to decide between substituting vegan ingredients in their existing baked goods, or introduce a new product that has a lighter EF. In the end, we decided to develop a new product that would have a lighter EF and be acceptable to BCC customers.

After consultation with Bev Teh for new product ideas, she expressed interest in a vegan breakfast bar which will provide customers more variety in their options at BCC. Keeping Bev The's suggestions in mind, we decided to develop a breakfast bar free of animal products that utilized local produce (see appendix).

#### ***4.5.2 CONSULTATION WITH LOCAL PRODUCERS:***

One of our group's goals was to incorporate UBC farm produce into the new product. It was also desirable that availability of the produce be minimally affected by seasonality (the product would need to be able to store for a long period of time). Pumpkin was a possible candidate and the farm is able to supply the AMSFBD weekly with it, but we were uncertain of its storage space at the SUB and doubtful that BCC would be willing to process the pumpkins. Blueberries appeared to be feasible since the farm has already planted blueberry bushes and they are expected to produce fresh blueberries for the summer of 2010. Not only are blueberries suited for organic culture (Kuepper & Diver, 2004), 99% of blueberries in B.C. are grown in the lower mainland and B.C. produces 90% of Canadian grown blueberries (AAG, 2008). This makes blueberries a very sustainable ingredient option to be used in baked goods. The demand for blueberries appears to be on the rise due to recent health claims (Lehnert, 2009), and we think that AMS may look into sourcing more blueberries for its potential business growth. There are numerous dried blueberry facilities in the lower mainland so sourcing it locally would not

present a problem as long as the cost does not far exceed the imported ones. The challenge, though, is to convince the AMSFBD sourcing management to switch from its existing dried blueberry source from California to a local source. In addition to sourcing our blueberries from producers in the lower mainland, we are hopeful that production quantities of blueberries in the UBC farm will substantially increase after implantation of new producing plants in 2010.

After consulting with the AMS food supply manager Nick Gregory, and BCC manager Bev Teh, we found that the venue's current supply of ingredients have a high EF that are mostly shipped from outside of Canada (B. Teh, Personal Communication, March 10, 2009 and N. Gregory, Personal Communication, March 14, 2009). As a group, we agreed that by reducing the EF of most of the ingredients in the AMS can help to significantly decrease the burden of pollution on the environment. We looked into blueberry suppliers in the lower mainland and contacted those that supply both fresh and dried blueberries. Although most producers expressed enthusiasm and support in our project, they felt that their connection to UBC should be through direct communication with UBC food services. Due to the time constraint of our project, we could not help UBC food services establish better connection with the local suppliers (see appendix).

#### **4.6 PRODUCT DEVELOPMENT: BLUEBERRY CHOCOLATE BREAKFAST BAR**

Last year's ASGC 450 group identified granola bars as something that current BCC customers would like to see offered (AGSC 450, Group 15, 2008); our group decided that would be a great starting point. We also recognized that most of the food offered at BCC are quite sweet and felt that students needed a healthier option to start off their day. We did our best to

align our goals with those of Bev Teh's. With respect to her concern about cost to students, we steered away from going completely organic (see appendix). Our group attempted to perform a cost analysis for an exclusively organic bar; however the price list provided by Nick Gregory only includes ingredients that the AMSFBD currently purchases. Organic ingredients were not on this list. Our group also created a version of the breakfast bar using dried cherries; however we decided to focus on blueberries since cherries are less abundant. We also checked the price of dried cherries in the Snow Cap catalogue provided by Nick Gregory, they are about four times the price of dried blueberries (Snow Cap Ltd, 2006), thus not cost effective in terms of Bev Teh's goals of our bar. To increase marketability and possibly have better sales, our group chose to use chocolate in the breakfast bar since many of BCC products have either lots of sugar or chocolate we decided to keep our breakfast bar align with BCC products. Although chocolate is not a local ingredient, our group feels that using chocolate as one of the ingredients is a strong marketing strategy. We also chose to focus our marketing approach on lower environmental impact rather than on vegan ideals, due to the possible negative association that was discovered by Group 15 of AGSC 450, 2008. According to their survey, 37% said that they would seldom purchase vegan products, while 25% had no interest in vegan products (AGSC 450, Group 15, 2008). Although our product is in fact vegan, we decided that we should not highlight that in the name of the product. We suggest that "egg and dairy free" could be written in small print under the name, in addition to the notice that it contains peanuts. This will hopefully attract a wider consumer base to the product, and be attractive to vegans and non-vegans alike. In addition, we if our recipe is accepted, we would like to see an EF sign by the product to raise awareness.

#### **4.6 SURVEY RESULTS: TASTE TEST OF THE BLUEBERRY CHOCOLATE BREAKFAST BAR**

Forty-seven customers participated in the taste test of our Blueberry Chocolate Breakfast Bar in the SUB near BCC on Monday March 23, 2009 at 9 AM. A random selection of both BCC customers and individuals within the building were asked to participate in order to reduce the bias for our survey. Sixty-six percent of participants indicated that they would buy our product, which shows there is strong interest in our breakfast bar. Of the forty-seven participants: 55% of were frequent customers of BCC who visited BCC daily or a few times per week, 45% of participants were then seldom visitors. Given that almost half of the participants of our taste test were not frequent customers of BCC our results reflect a more comprehensive demand of our product; which also eliminates the biases of face-to-face surveys since there is a tendency for surveyors to choose participants. Our goal of the taste test was to identify the acceptability of our breakfast bar therefore our group feels that the face-to-face survey bias did not significantly skew our results.

Results from our survey show that when worded differently, a vegan product could be seen as more desirable. AGSC 450 group 15's survey showed that 62% of participants were not likely to buy a product labeled "vegan" (AGSC 450, Group 15, 2008); however our survey concluded that 70% would purchase a product that they knew had a "lighter ecological footprint". Therefore, the same product, marketed differently, would be more desirable to the customers (see appendix).

While analyzing the survey results, we decided to adjust the data for question five (*Are you more willing to buy a product which has a lighter EF?*). In question four we ask whether the

individual knows what an EF is, if they answered no, then we omitted their answer to question five since our group believes these participants did not have a valid reason to want to support a cause they did not understand.

About half of our participants provided useful comments which will help future ASGC 450 groups and further improve our product if BCC decides to sell it. Many of them enjoyed our breakfast bar as it was not too sweet and it contained blueberries. Some customers commented on the texture of the bar and indicated that it was too dry and needed to be moister. Aside from those who commented on the taste of the bar, two individuals expressed interest in the lighter EF and expressed hope that UBC venues will increase their development of more environmentally sustainable food products. Although it was great to see that many individuals are aware of the lighter EF concept, only a few participants asked for further details about the goals of our project (see appendix).

## **5. RECOMMENDATIONS**

The accomplishment of our project has led into the development of additional goals and objectives for lowering the EF of AMS food outlets. While there are several areas to improve the EF of the AMS outlets, we have noted some specific areas that warrant further investigation. Our recommendations are applicable to anyone involved in AGSC 450, the UBCFSP, the AMSFBD, the UBC farm, and/or the UBC sustainability office.

### **Our recommendations include:**

- Increasing the amount of local food products used by AMS food outlets, especially items like blueberries that are grown in large quantities here in BC. We recommend further

investigation into available BC sources of these products and making contact with suppliers to facilitate the transition to incorporating them into the current food procurement methods.

- Develop a sticker or stamp that can be placed on the packaging of low EF items offered at BCC and possibly other AMS food outlets. Another lower cost option may be to create a standardized low EF label that can be put on menu boards or product identification signs.
- Snow Cap is a wholesale frozen foods distributor which AMSFBD sources most of their ingredients from. They have recently undergone substantial changes resulting in them dropping their contracts with local farms in BC. Look into developing a contract with these local farms; they may have once supplied UBC
- Work with BCC to lower the EF of their existing menu items. This may include using plant based substitutes for the animal products in their baked goods, using more organic ingredients and/or using more local ingredients.
  - Encourage the implementation of the Blueberry Chocolate Breakfast Bar as it is a product that meets all of Bev Teh's requirements
  - If the Blueberry Chocolate Breakfast Bar is initiated at BCC, future groups should research its success to determine if there is a market to increase vegan products at BCC

- Future groups should also look into the cost of organic ingredients through Snow Cap and perform a cost analysis for an exclusively organic bar, or find other sources of organic ingredients
- Look at BCC's waste management practices and see where there is room to improve.
- Focus on educating AMSFBD customers about EF products and developing marketing strategies for low EF products to increase their sales

## **6. CONCLUSION**

Our group began the AGSC 450 project with the scenario for lowering the EF of the AMS. Through collaboration with BCC, we developed a new lower EF menu item that BCC will hopefully incorporate into their existing menu. Through research and previous experiences we were able to expand our knowledge of how to lower a food vendor's EF and put that knowledge to use in our project. Since the semester is only three months long, we accomplished what we were able to and developed recommendations for the proceeding years to carry on from where we left off (see section 5 - recommendations). Lowering the EF of AMS food vendors is important for the sustainability of the local as well as the global food system. Lowering the impact on the environment can only be accomplished one step at a time and lowering consumption of animal products, and increasing the usage of local and organic foods is a great start. We hope to see development towards sustainability goals within the AMSFBD as they are able to incorporate our recommendations into their practices



## 7. REFERENCES

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## 8. APPENDIX

### AGSC 450 Group 10 Survey Questions

**1. How much do you like this product?**  
(Please circle your preference)

Not at all      1      2      3      4      5      Very Much

**2. How often do you purchase an item at Blue Chip Cookies?**  
(Please circle one)

Daily              Few Times a Week              Once a Week  
Once a Month    Every Few Months              Never

**3. Would you buy this product if it was available at Blue Chip Cookies?**

Yes                      No                      Unknown

If not or unknown, why?

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**4. Are you aware of the concept of Ecological Footprints?**  
Yes                      No

**5. Are you more willing to purchase this product knowing that it has a lighter Ecological Footprint?**

Yes                      No                      Undecided

*Thank You*

### Web Based Initiative Links

- <http://www.ecoearth.info/>
- <http://www.veganoutreach.org/whyvegan/index.html>

### Potential local suppliers of dried and fresh blueberries

- Honeyland Canada, with Dr.Bee (Pitt Meadows) - Fresh or Dried organic blueberries  
contact #: (604) 460-8889
- Westberry Farms (Abbotsford) - Organic fresh, frozen, or dried blueberries  
contact #: (604) 850-0377
- Maan Farms (Abbotsford) - fresh seasonal blueberries
- Purewall Blueberry Farms Ltd. (Pitt Meadows) - fresh and frozen blueberries
- DFG organic blueberries (Richmond) - fresh or frozen blueberries

## Group 10 Survey Results

1) How much do you like this product?			(1=not at all; 5=very much)
	# of people	%	
answered 1:	0	0.00	
answered 2:	1	2.13	
answered 3:	11	23.40	
answered 3.5:	3	6.38	
answered 4:	27	57.45	
answered 5:	5	10.64	
total	47	100.00	
2) How often do you buy at Blue Chip?			(D=daily; F=few times a week; W=once a week; M=once a month; E=every few months; N=never)
	# of people	%	
daily	8	17.02	
few times/week	18	38.30	
once/week	7	14.89	
once/month	9	19.15	
every few months	3	6.38	
never	2	4.26	
total	47	100.00	
3) Would you buy this product?			(Y=yes; N=no; U=unknown)
	# of people	%	
YES	31	65.96	
NO	8	17.02	
UNKOWN	8	17.02	
total	47	100.00	
4) Are you aware of the concept of Ecological Footprint (EF)?			
	# of people	%	
YES	39	82.98	(Y=yes; N=no)
NO	8	17.02	
total	47	100.00	
5) Are you more willing to buy a product that has a light EF?			
	# of people	%	
YES	37	78.72	(Y=yes; N=no; U=undecided; void if they answered "no" on question 4)
NO	4	8.51	
UNDECIDED	6	12.77	
total	47	100.00	
**the final data for this question minus all that answered "N" to question 4 and "Y" to question 5; the voided answers were moved into the undecided category:			
	# of people	%	
YES	33	70.21	
NO	4	8.51	
UNDECIDED	10	21.28	
total	47	100.00	



Blueberry (or Cherry) Chocolate Breakfast Bar

Makes 12 Servings

½ cup	Water	125 mL
1 cup	Brown Sugar	250 mL
½ cup	Peanut Butter	125 mL
½ cup	Canola Oil	125 mL
1 tsp	Vanilla	5 mL
2 cups	Rolled Oats	500 mL
1 tsp	Whole Wheat Flour	250 mL
¼ tsp	Salt	1 mL
½ cup	Wheat Germ	125 mL
½ cup	Dark Chocolate Chunks	125 mL
½ cup	Dried Blueberries	125 mL

1. Preheat oven to 300 degrees. Line a 9x13 inch baking pan with parchment paper, leaving an overhang on sides.
2. Dissolve brown sugar in hot water. Add peanut butter and stir until combined. Stir in oil and vanilla.
3. In a large bowl, combine oats, flour, wheat germ, and salt. Add peanut butter mixture and stir to combine. Stir in chocolate and dried fruit,
4. Spread mixture in prepared baking pan, and bake on centre rack until light golden but still soft – about 15 minutes. Cool for 5 minutes in pan, then lift (using parchment overhang as a sling) onto a wire rack to cool. Cut into desired number of servings.

Nutritional Facts Label of Blueberry Chocolate Breakfast Bar

<b>Nutrition Facts</b>			
Serving Size 1/12 of recipe 79g (78 g)			
<b>Amount Per Serving</b>			
<b>Calories</b> 369	Calories from Fat 162		
<b>% Daily Value*</b>			
<b>Total Fat</b> 19g	29%		
Saturated Fat 3g	17%		
Trans Fat 0g			
<b>Cholesterol</b> 0mg	0%		
<b>Sodium</b> 106mg	4%		
<b>Total Carbohydrate</b> 46g	15%		
Dietary Fiber 5g	19%		
Sugars 24g			
<b>Protein</b> 8g			
Vitamin A 0%	Vitamin C 0%		
Calcium 4%	Iron 14%		
*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
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Fiber		25g	30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4			
© www.NutritionData.com			

Cost Analysis of Blueberry Chocolate Breakfast Bar

<i>Ingredient</i>	<i>Metric Amt</i>	<i>Vol ↔ Wt Conv</i>	<i>Price (As Purchased)</i>	<i>Actual Cost For This Recipe</i>
Water	125 mL	125g	\$ 0.00 / 125g	\$ 0.00
Brown Sugar	250 mL	220g	\$ 30.48 / 20kg	\$ 0.36
Peanut Butter	125 mL	129g	\$ 22.20 / 10kg	\$ 0.29
Canola Oil	125 mL	109g	\$ 21.00 / 16L	\$ 2.50
Vanilla	5 mL		\$ 2.16 / 500 mL	\$ 0.02
Rolled Oats	500 mL	312g	\$ 21.90 / kg	\$ 6.24
Whole Wheat Flour	250 mL	120g	\$ 16.08 / 20kg	\$ 0.10
Salt	1 mL	1.5g	\$ 9.84 / 20kg	\$ 0.00
Wheat Germ	125 mL	61g	\$ 16.90 / 15kg	\$ 1.22
Dark Chocolate Chunks	125 mL	66g	\$ 121.07 / 13.64kg	\$ 0.59
Dried Blueberries	125 mL	64g	\$ 59.95 / 2.27kg	\$ 1.69
		[Total]		\$13.01
		[Total per Serving]		\$1.08

Iris slow cook oats:  $\$21.90/25\text{kg} = 21.90/1000 =$  \$0.02 /g  
Wheat germ:  $\$16.90/15\text{kg}$  \$0.02 /g  
**Dried SOUR cherries:  $\$82.80/10\text{lb (4.54 kg)}$  \$0.08 /g**  
Canola oil:  $\$21/16\text{L}$  \$0.02 /ml

(Snow Cap Product List, 2006)