

Exploring Ways to Lighten the Ecological Footprint of Blue Chip Cookies

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AGSC 450

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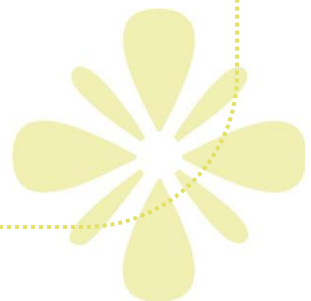


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ABSTRACT

As part of the ongoing UBC Food System Project of 2009, the objective for scenario two is to lower the ecological footprint (EF) of the AMS, specifically at Blue Chip Cookies (BCC),

by introducing eco-friendly vegan menu selections and determining the effectiveness of the current AMS Lighter Footprint Strategy (AMSLFS). Together with other scenarios, the goal is to make the UBC food system more sustainable. As universities are a microcosm of the larger society, a movement at UBC can be adapted by others, for making a larger impact. Based on literature reviews, previous work of AGSC 450 projects, and interviews with stakeholders, this project focuses on the implementation of Local, Organic, and Vegan (LOV) products in the UBC food system as well as improving the marketing of the AMSLFS. Recipes were developed for vegan selections that could be incorporated at BCC. Two different surveys were randomly administered to UBC students in order to receive feedback for the newly developed vegan cookies and also to measure the awareness of AMSLFS in the Student Union Building. The results showed positive responses from possible consumers of the vegan cookies as well as the need for more effective promotional materials to raise awareness of lowering EF. Lastly, several recommendations are provided to *BCC*, AMS Food and Beverage Department, future AGSC 450 students and the AGSC 450 Teaching Team.

I. INTRODUCTION

The status of our global ecosystem is being threatened as high carbon emissions, growing populations, destruction of natural habitats, and increasing demands for energy and fossil fuels contribute to the potential devastation of the Earth. The food industry is a large contributor to the threat as high amounts of energy is used for production and transportation of foods. Methods and initiatives have been proposed to decrease the energy demands within the food systems by promoting the idea of sustainability. The University of British Columbia (UBC), as mandated by the BC government, is to become carbon neutral by 2010, making the university a valuable model of sustainability (UBC Sustainability Office, 2009). The UBC Food System Project (UBCFSP) is an ongoing collaboration between Agricultural Sciences (AGSC) 450 students and multiple partners to determine different ways of achieving sustainability through the campus food system.

Our group's scenario, *Exploring Ways to Lighten AMS Food and Beverage Department's Ecological Footprint*, focuses on decreasing the ecological footprint (EF) of menu items at *Blue Chip Cookies (BCC)* through introduction of lighter footprint recipes. We also analyzed the effectiveness of current AMS marketing strategies for promoting eco-friendly choices (UBCFSP Scenario, 2009). This paper will discuss current problems within the global food system and our approaches to solving this problem. Based on our findings, we will provide recommendations to *BCC*, the AMS Food and Beverage Department (AMSFBD), future AGSC 450 students and the AGSC 450 teaching team.

i) Problem Definition

As the world's population continually expands, so does the demand for food. Consequently, this threatens the sustainability of the global food system, the environment, and the earth's climate in numerous ways. In order to evaluate this significance, the term "Ecological

Footprint" (EF) has been coined to measure one's impact on the ecosystem (Richer, 2008). EF measures the amount of land and water area that is required to produce the resources a population consumes and the planet's ability to reabsorb the generated waste products (Global Footprint Network, 2009). In Canada, the approximate EF is 7.6 hectares per person, which is higher compared to the global average of 2.2 (Doherty, 2008). Moreover, mankind's ecological footprint has exceeded the sustainable level by 23%, thus finding ways to reduce the EF is crucial for the survival of the world (Doherty, 2008 and Richer, 2008). The food system is an important and significant part of any community, and by reducing its EF, we are ensuring that our goals of a sustainable food system will become more attainable. Therefore, as UBC students involved in this project, finding ways to reduce the EF of the UBC food system is a significant step towards a sustainable campus.

Our food choices have significant effects on the environment and according to a study in 2007, diet accounts for nearly 25% of the overall EF of an individual (Collins, 2007). Animal proteins are considered as high EF foods; and among these, beef and fish have significantly higher EF than pork or poultry (Collins, 2006). For milk products, butter and cheese are some of the highest while yogurt and whole milk are ranked the lowest (Collins, 2006). Conversely, vegetables, fruits, and whole grains generally have much lower EFs than meats and animal products (Collins, 2006). The consumption of animal protein and animal products is associated with higher EF values because the farming of animals is often linked to deforestation, soil erosion, high fossil fuel demands, air and water pollution, biodiversity loss, the destabilization of communities, and the spread of diseases (UBCFSP Scenario, 2009). Therefore, eating vegan foods can help mitigate these demands and as a result, lower the EF. Similarly, organic foods

lower the EF through the non-use of chemical pesticides and nitrogen fertilizers resulting in reduced energy use of the farming process (The Benefits of Organic, 2007). Furthermore, foods travelling long distances require more energy for transportation and storage, resulting in a higher EF (UBCFSP Scenario, 2009). However, locally produced foods, defined as being grown and processed in BC in our context, not only reduce EF by decreasing transportation miles, fossil fuel use, and greenhouse gas emissions, but also support the local farmers and businesses (UBCFSP Scenario, 2009). For these reasons, choosing more eco-friendly options such as locally produced, vegan and organically grown foods can benefit the environment.

UBC has realized the existence of this problem and has been working continuously with the AMSFBD in creating an Environmentally Sustainable Policy (UBCFSP Scenario, 2009). Our group is inspired by Margaret Mead's quote: "Never doubt that a small group of thoughtful and committed citizens can change the world. Indeed it is the only way forward" (Carolina, 2009). Although our efforts may seem small and trivial at the moment, it is significant in the big picture as we hope to slowly transform UBC into a leader in sustainability and a model in which other universities, cities, and countries can emulate.

Our specific task was to lighten the EF of the *BCC* menu by incorporation of new local, vegan, and/or organic (LOV) products. Currently, *BCC* has two vegan options - the vegan bread and the vegan brownie - and they hope to increase their vegan selections so that customers will have more options for purchasing lower EF items. We also feel that educating students about lower EF food items and its significance in creating a better environment is important. This will increase their awareness and enable them to make better decisions in purchasing food items from on and off-campus food outlets.

ii) Vision Statement and Identification of Value of Assumptions

Our group is in agreement with all of the guiding principles in the vision statements developed by the teaching team and project partners (A. Rojas, personal communication, March 2, 2009). However, we believe that some of the statements can be improved. Locally grown and produced foods do not mean they are grown without genetic modification, chemical fertilizers, or pesticides; therefore, we suggest that statement one can be modified to "Food is *organically* and locally grown, processed, and produced". Furthermore, we also feel that the vision statements do not directly address the integrity of the ecosystem, thus an additional statement should be added. We propose the eighth statement to be "The production, processing, and distribution of food should not harm or damage the surrounding environment or ecosystem."

All the members in our group share similar values and views about sustainability as we all have adopted the weak anthropocentric paradigm. We are aware of current issues threatening the sustainability of the global food system and the environment, but we still put humanity above nature. We care a great deal about the environment and realize that it is essential for human survival, but we do not change our lives completely for it. For example, most of us compost and recycle and try to eat as locally and organically as possible, but we are not vegetarians. Since we are all Nutritional Science majors, we believe that eating a well-balanced diet is the key to a healthy life.

II. METHODOLOGY

In conducting our scenario, we used a number of methods to obtain our results. These methods were mainly adopted from Community-Based Action Research (CBAR) involving continuing observation, reflection, and action (Richer, 2008).

Methods of Data Collection:

i) Online Research & Literature Review:

- Extensive research on various online sources, which include previous AGSC 450 group papers and available articles, web pages, and links posted on Vista.
- Online search of current off-campus initiatives in lowering EF
- Online sources and cookbooks for our vegan cookie recipes

ii) Project Development & Interviews with Project Partners

- Face-to-face interviews with Bev Teh (*BCC* Manager) and Nancy Toogood (*AMSFB* Manager), and email interview with Nick Gregory (*AMS Store Supplies* Manager) were conducted to obtain necessary information for our vegan cookie development and surveys.
- Consultation with Group 10 (another group working with *BCC* for the same scenario) to ensure there were no overlaps and to provide a broader spectrum of ideas

iii) Recipe Experiments and Tasting Questionnaires

- Our group experimented by baking several different vegan cookies and using some ingredient substitutions for the vegan cookie recipes found online and in cookbooks.
- Several cookies were made and tasted among our group, these include *Peanut-butter Banana Oatmeal Cookies*, *Vegan Chocolate Espresso Cookies (using fair-trade coffee)*, *Vegan Oatmeal Raisin Cookies*, and *Vegan Chocolate Chip Oatmeal Cookies*.
- Selection of the top two cookies, *Vegan Oatmeal Raisin Cookies* and *Vegan Chocolate Chip Oatmeal Cookies*, for our taste test survey and possible addition to the *BCC* menu.

iv) AMS Lighter Footprint Strategies/Initiatives (AMSLFS) Survey

- To evaluate the effectiveness of current marketing strategies on promoting low EF initiatives in *AMS Food and Beverage (AMSFB)* outlets.

- The survey was conducted in the Student Union Building (SUB) over the week of March 23 - 27, 2009 and at different time slots each day to randomize the sample as much as possible.

III.RESULTS

i) Results from Literature Review, Research, and Observation

a) Efforts of Reducing EF

On Campus (UBC) Initiatives:

Many AMS food outlets at UBC have taken initiatives towards reducing their EF. Outlets such as *Bernoulli's Bagels*, *The Honour Roll*, *The Pendulum*, *Sprouts*, and *Pie R²* offer local, vegan and/or organic items (Alma Mater Society, n.d.). *Bernoulli's Bagels* use organic flour and other local ingredients while *The Honour Roll* has expanded their menu with local and vegan choices (Alma Mater Society, n.d.). Both *The Pendulum* and *Pie R²* are constantly working on new dishes using local ingredients, with *Pie R²* receiving some of their products from the UBC Farm (Alma Mater Society, n.d.). As a part of the AMS lighter footprint strategy, AMS outlets sell LOV foods and showcase them during Eco-friendly day (Alma Mater Society, n.d.). *Sprouts*, an outlet established with the help of AMS, is best known for selling local and organic foods at a student-friendly price (Doherty, 2008). In addition to providing locally grown and organic options, all AMS food outlets, as well as UBC Food Service (UBCFS) also offer fair trade organic coffee (UBC food service, n.d.). Lastly, the UBC Farm supplies herbs and salad greens to UBCFS (UBC food service, n.d.).

Off-Campus

Initiatives:

Our colleagues in previous AGSC 450 groups have researched extensively on initiatives taken by other educational institutions to lowering their EF. We decided to expand on that and

research non-university related communities and their quest to reduce EF. In the lower mainland, many of Vancouver's finer restaurants offer seasonal, organic, and sustainable menus with emphasis on using local ingredients (Green Living, 2009). For example, *Chow Restaurant* offers a seasonal menu and also lists the restaurant's local suppliers, which further shows their dedication towards a low EF menu (Green Living, 2009). Other notable restaurants include *Zin*, *Bishop's Fine Dining*, and *Goldfish Pacific Kitchen* (Green Living, 2009) Likewise, Bakeries such as *Sweet Cherubim* and *Uprising Breads* use organic ingredients in their baked products while cafés like *Caper's Cafe* and *Tomato Fresh Food Cafe* offers local, organic and vegan items (Green Living Guide, 2009).

Other initiatives in reducing EF are rooftop gardens and urban agriculture. Many communities are implementing this strategy as it not only reduces their EF, but also provides them with healthy and nutritious foods that are easily accessible and readily available (City Farmers, 2007). Restaurants and university cafes now often have rooftop gardens as chefs and food providers are becoming increasingly aware of the importance of using fresh, local, and organic ingredients (City Farmer, 2007) (See Appendix E for other off campus food outlets supporting low EF).

b) Results and recommendations from previous AGSC 450 projects

Our group reviewed papers from previous AGSC 450 groups working with *BCC*. Their research on initiatives taken from other institutions to lighten EF was important as this information allowed us to gain an understanding that UBC, other universities in the United States, and some local restaurants have all taken steps to become forerunners toward the improvement of our environment (Group 15 & 28, 2008). The initiatives done by others are very encouraging for AMSFBD to change and lighten the EF at UBC.

From last year's paper, Group 28 (2008) five food products that contribute to a high EF on the *BCC* menu: butter, eggs, flour, processed fruits and processed vegetables. Moreover, we found from Group 28 (2008) that *Bernoulli's Bagels* uses organic flour and suggest that *BCC* could switch to the use of organic flour as well. However, organic flour is double the price of normal flour; therefore, there is a price concern for the cookies that are made (N. Gregory, personal communication, March 19, 2009). With this information, we decided that developing a vegan cookie is the most viable choice as we can easily substitute animal products such as butter and eggs with lower EF products like oil and bananas.

Group 15 researched the efforts implemented by the UBCFS and AMSFBD to lighten their EF; these initiatives include (1) offering compostable takeout containers made of bamboo fiber and corn, (2) \$0.25 discount when bringing your own food container, (3) \$0.15 mug discount for coffees, (4) bio-degradable take out food containers offered at \$0.25, (5) compostable cups made of paper, and (6) air injected paper cup covers (Group 15, 2008). Although many of these initiatives are in effect, Group 15 noted the lack of awareness concerning these issues and the need for better promotion of the AMSLFS (Group 15, 2008).

c.) Observation of Blue Chip Cookies Outlet

Since some of our group members are frequent *BCC* customers, our group decided to do some observation at *BCC*. Prior to our project, some group members were unaware of the special discounts offered which included 'bringing your own coffee mugs' and Eating Eco-friendly Stamp Cards. Furthermore, upon careful observation, we noticed that *BCC* sells two vegan products – their *Vegan Brownies* and *Vegan Bread with rosemary, olive oil, and herbs* – but were difficult to notice and hard to attract customers as these products were placed in the inside-left corner of the outlet.

ii) Interview Results:

a) Bev Teh – Blue Chip Manager

To begin our research, we conducted an interview with Bev Teh and asked questions related to their use of LOV products, the demand they had for these products, and possible ideas for new products. Ideally, our group wanted to develop a cookie that was local, organic and vegan, however, based on previous findings, the only mill for flour in BC is expensive and it receives wheat from other provinces, which makes it hard to call "local", and the price is very costly (Group 28, 2008). Furthermore, local foods are also limited in quantity and are not guaranteed to be available all year round. Bev Teh (personal communication, March 10, 2009) also felt that the use of organic ingredients is too expensive and may deter students from buying them. Instead, she expressed interest in recipes that would incorporate whole wheat for nutrition purposes. She was also open to the idea of increasing the vegan cookie selection at *BCC* since there are only two vegan products currently offered for the "AMS Eco-Friendly day".

The vegan *Ginger Spice Cookie* that was developed by last year's AGSC 450 group 15 is no longer offered due to the lack of interest by customers, although a modified ginger spice cookie is being sold in place of the old (B. Teh, personal communication, March 10, 2009) In addition, *BCC* does not use many local or organic ingredients due to price; the only locally processed product being used is sugar from *Roger's Sugar* (B. Teh, personal communication, March 10, 2009). Our group originally thought about using a reusable "Compost Me" label that can be stamped on all the cups to encourage the customers to properly dispose of the compostable cups. However, Bev Teh mentioned that previous AGSC groups have tried a similar idea using stickers, and she felt that this method had not been successful, thus, *BCC* had discontinued this initiative (B. Teh, personal communication, March 10, 2009).

b) Nancy Toogood – AMS Food and Beverage Manager

Through a group interview with Nancy, we found that the AMS has had various marketing for promotion of the AMSLFS. Nancy and the AMSFBD has been accused of “sign pollution” and wished to know whether current AMS marketing strategies are effective in delivering their messages to the students and consumers (N. Toogood, personal communication, March 11, 2009). She also mention that the current system for enforcing AMSLFS initiatives in the AMS outlets is slack; she indicated that she and her assistant visited stores and tried to encourage it (N. Toogood, personal communication, March 11, 2009). However, a new Sustainability Team will be created to help AMS outlets promote AMSLFS initiatives (N. Toogood, personal communication, March 11, 2009). Based on this suggestion, our group then decided to conduct a general survey on AMS marketing strategies and their effectiveness on the student body.

c.) Nicholas (nick) Gregory – AMS Food Purchaser

Our group asked Nick via e-mail a series of questions concerning the ingredients used by AMS food outlets and *BCC*. We were interested in the ingredients used by *BCC*, its costs, and possibilities of switching these ingredients to local and organic sources; this was important in analyzing the cost for our proposed vegan cookie. However, Nick (personal communication, March 26, 2009) mentioned that the source of the ingredients are often unimportant because they are considered “commodity” items that are low value and are infrequently purchased; therefore, they do not consider the brands or origin when purchasing the products. The suppliers also do not notify them of brand changes unless a certain one was requested. AMS purchases are based on availability and mutually beneficial brand or product (N. Gregory, personal communication, March 26, 2009).

iii) Product Development

Keeping cost, timeliness, and ingredient availability in mind, both cookies were developed for the purpose of incorporation into the BCC menu. With an ingredient and cost list provided by Nick Gregory, we knew the selection available to AMS outlets and what their approximate costs were. We also took into account the concerns of Bev Teh and Nancy Toogood, such as cost, flavor, and seasonal availability. After developing the cookies, we surveyed students to determine the popularity of each cookie and received feedback from BCC staff. Bev Teh and the staff members (personal communication, April 3, 2009) felt that the cookies needed to be moister; however, no comment was made about the taste of the cookies. The staff (personal communication, April 3, 2009) also agreed that it would be feasible to produce the cookies as time and cost would be comparable to the non-vegan cookies.

iv) Vegan Cookies Tasting Test

a) Vegan Chocolate Chip Oatmeal Cookie

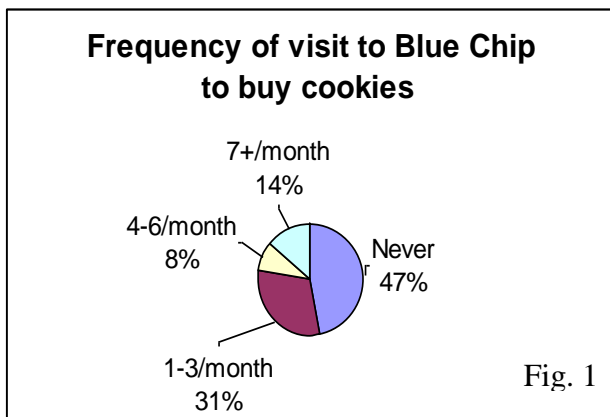
The biggest challenge of making this cookie was ensuring that all ingredients were vegan. It was difficult to purchase the ingredients for these cookies at the bulk section of regular supermarkets because no ingredient list was provided. Therefore, most of the ingredients for the *Vegan Chocolate Chip Oatmeal Cookie* were purchased at *Capers/Whole Foods Market*, where a complete list of ingredients was provided. (See Appendix E for list of ingredients and recipes). Specifically, organic bananas, oatmeal, and local flour were used. The nutrient analysis for approximately 80g of *Vegan Chocolate Chip Oatmeal Cookie* is 424.55kcal, with 3.64g of Protein, 57.25g of Carbohydrate, and 20.67g of Fat. The cost for a single cookie works out to be approximately \$0.76 per 100g of cookie, with over 50% of ingredients being local or organic (Diet Analysis Plus 7.0, 2005). The cost for the cookie would be significantly less using ingredients bought by the AMS due to their purchasing power and use of conventional non-local and non-organic products.

b) Vegan Oatmeal Raisin Cookie

The nutrient analysis for a single Blue Chip Cookie sized *Vegan Oatmeal Raisin Cookie* yields 446.33kcal, with 3.82g of protein, 66.94g of carbohydrate, 19.3g of fat, and 2.75g dietary fiber. The cost for a single cookie is approximately \$0.46, with over 50% of ingredients being local or organic (Diet Analysis Plus 7.0, 2005). Comparison of nutritional contents and proposed cost of both cookies can be referred to following table:

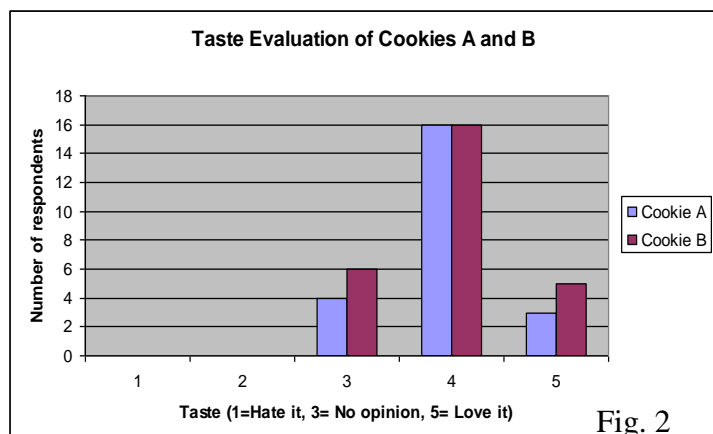
	<i>Chocolate Chip Oatmeal Cookie</i>	<i>Oatmeal Raisin Cookie</i>
Protein (g)	3.64	3.82
CHO (g)	57.25	66.94
Fat (g)	20.67	19.3
Calorie (kcal)	424.55	446.33
Cost (\$/ cookie)	0.76	0.46

v) Questionnaires Results



For the ease of the taste test and survey, we have designated the *Vegan Oatmeal Raisin Cookie* as cookie A and the *Vegan Oatmeal Chocolate Chip Cookie* as cookie B (Appendix B). Our taste-sampling survey showed that of the 50 respondents, almost half (47%) do not visit Blue Chips, while 31% visit one to three times a

month, 8% four to six, and 14% visit more than seven times per month (Fig.1). We also found that cookie B was slightly preferred over cookie A; 27 selected cookie B while 23 selected A. Furthermore, from the taste



evaluation, both cookie A and B received a rating of 3 or higher. Of those who preferred cookie A, 19 respondents rated a 4 or 5 indicating they either liked it or loved it (Fig. 2).

Similarly, 21 respondents who preferred B also rated the cookie a 4 or a 5 (Fig.2). Moreover, the majority of the respondents indicated that they are willing to buy the cookie if it was sold at BCC, suggesting a possible increase in business for the outlet. Of the 23 participants who preferred cookie A, 12 (52%) said ‘yes’ to purchasing it if it was sold at BCC while 11 (48%) said ‘maybe’, and none said ‘no’; and of the 27 who preferred cookie B, 12 (44%) said ‘yes’ while 10 (37%) said ‘maybe’, and only 5 said ‘no’ to purchasing the cookie. Our last question asked all participants if they were more willing to purchase the cookies if it was vegan and eco-friendly, and 48% said ‘yes’ while 38% said ‘maybe’, and only 8% and 6% said ‘don’t care’ and

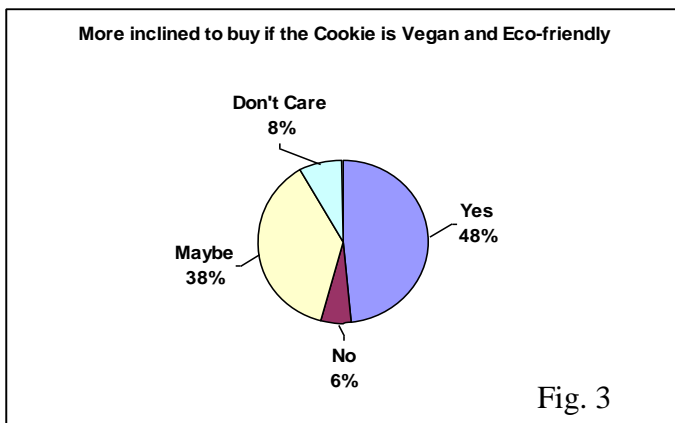


Fig. 3

‘no’, respectively (Fig. 3). This is significant as our results indicate that people are willing to purchase a product knowing that it is somehow beneficial to them, thus suggesting the need to make the link between LOV foods and how it lowers the

EF.

Another survey we conducted was to determine the effectiveness of the AMS Lighter Footprint strategy on the student body. The survey conducted around the SUB resulted in 176

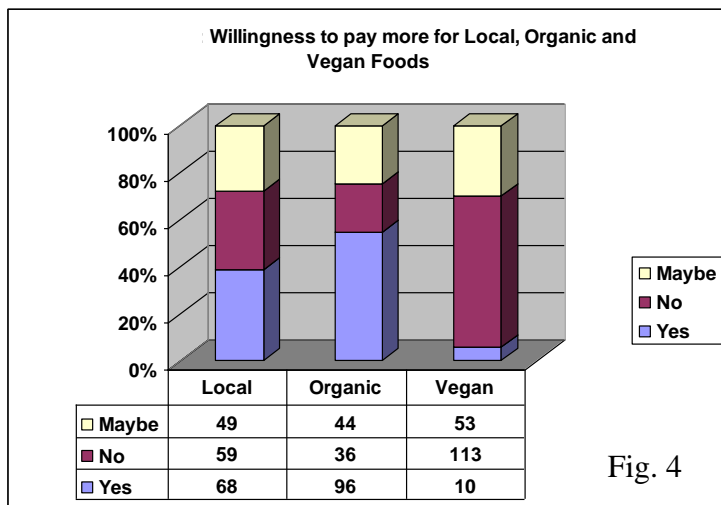


Fig. 4

responses (Appendix C). The results showed that 55% of respondents are more inclined to buy foods that are local, organic or vegan if it is more

ecologically friendly, while only 3% answered “No”. When asked whether they would be willing to pay more for local, organic or vegan foods, 39% of people are willing to pay more for local foods, 55% for organic foods, and 6% for vegan foods (Fig. 4). We wanted to know how much of the student body knew of AMS lighter footprint initiatives, so we asked whether the respondents knew about the 15-25 cent discount when bringing their own containers to AMSFB outlets, only 53% of respondents said “yes”. After our meeting with Nancy Toogood, we wanted

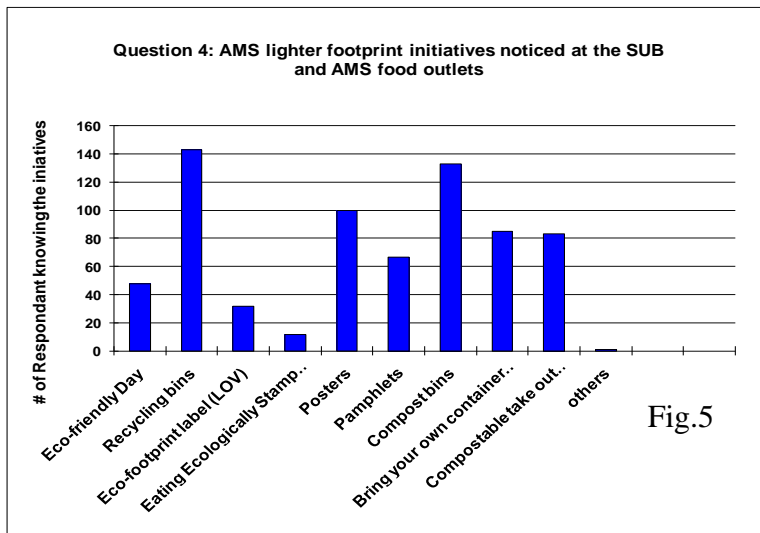


Fig.5

to investigate which marketing strategies the students noticed inside the SUB. According to our results, the recycling bins (81%), compost bins (75%), and posters (57%) were the most noticed while the Eating Ecologically Stamp Card (7%) was the least (Fig. 5). Another initiative

that we wanted to gauge was Eco-Friendly Day; only 14% of students knew that it took place every last Thursday of the month, while 11% has taken part in an Eco-Friendly day activity, and 15% did not know whether they had taken part. Of the people who answered “yes” to taking part in an Eco-Friendly Day activity, only 35% of people changed the way they purchased food.

IV. DISCUSSIONS

i) Cookies Tasting Questionnaires

Our group tried to eliminate bias by asking people to complete the survey from all over the SUB, not just BCC customers. Our cookie tasting survey indicated that there was no clear majority of preferences in the two cookies we presented. This may be due to our small sample size of only fifty participants, which may not be representative of the whole student body.

Ideally, we would like to have more tasting surveys, but with the time constraints and conflicts between group member's schedules, it was not very feasible to obtain a larger sample size. Although our sample size was small, our surveys indicated that the majority of the participants are willing to buy the vegan cookies if they are sold in *BCC*, which also includes people who've never visited this outlet. This suggests potential increase business for *BCC*. We did not expect the popularity and acceptance of the two vegan cookies, as most of our group predicted the majority of the public would not be attracted to vegan products. Since butter and eggs make up such an important part of texture and taste in baked goods, we thought the lack of these components in vegan products would prevent customers from liking it. However, our results clearly show that vegan cookies have the potential to succeed and possibly replace non-vegan cookies, which would dramatically reduce the EF.

During our survey, we had the chance to talk to some participants about reducing EF and overall sustainability issues in the food industry. We noticed that a large majority of them are unaware of how LOV products are more eco-friendly, and how they are involved in lowering EF. There has been so much coverage on how the use of fossil fuels directly impact and harm our environment that another equally important issue – the food industry's high energy demands– is often overlooked. We need to raise awareness about the beneficial impacts of LOV products, as our survey shows that more people are willing to purchase these products if they know how these foods are affecting the EF.

ii) General Questionnaire about current AMS Marketing Strategies

The purpose of this survey was to gauge the popularity of local, organic and vegan products at the SUB and the effectiveness of marketing strategies. More than 50% of respondents are willing to buy foods that are LOV if it is more ecologically friendly. The rest of

respondents that did not answer “yes” are likely to be unaware of how eating LOV foods can be ecologically friendly. We believe that this is due to the lack of education and thus, more efforts are required to build awareness of the importance of sustainability and lowering our EF. The survey showed that respondents are most willing to pay more for organic foods, likely because they know the health benefits of eating organic foods. With campaigns for supporting BC farmers and increased media coverage, local foods are also becoming more popular. However, very few participants were willing to pay more for vegan foods; we believe this is possibly due to low demand, conception of bad taste, and their belief that foods without animal products should not cost more.

One of the most important questions on our survey was to find out which AMSLFS initiatives students have noticed around the SUB, as this question gave us the overall effectiveness of the AMSLFS marketing strategy. Respondents mostly noticed compost bins, posters, recycling bin, container discount and compostable containers. Only one respondent answered “other” and stated “biodegradable cutlery” however, this is a UBCFS initiative and not AMS. Posters were noticed by more than half of the respondents, but information may not be received well by students because of the lack of knowledge of AMS initiatives like container discounts and Eco-Friendly Day. Results show that the use of the LOV label and Eating Ecologically Stamp Card at AMSFB outlets is inconsistent as there are low responses from our survey. We also found that very few people knew about Eco-Friendly Day, and fewer knew which day it was held. Of those who participated in Eco-friendly Day, few changed their way of purchasing food. However, this may be misleading as those who did not change their way of purchasing may have already been buying eco-friendly foods. This was a major limitation to our survey response and was likely to have caused the inconsistent results of question 6a. In

conclusion, AMS lighter footprint initiatives require more effective forms of education in order to get more students involved in making choices to lighten footprint. Enforcement of these initiatives to AMSFB employees is also important so that they take part in achieving the AMS's goal of lightening their EF.

V. RECOMMENDATIONS:

i) For Blue Chip Cookies:

1: Producing & selling cookies made with one or both of the suggested vegan recipes and making vegan choices more visible.

Reasoning: Vegan products require less energy and have lower ecological footprints. The vegan items being sold at Blue Chip are not clearly visible because they are placed at the inside edge of the cookie counter. Putting up a LOV label and placing the vegan cookies near the front counter would enhance the visibility of vegan choices.

2: Encourage employees to prompt and inform customers about AMS eco-friendly initiatives.

Reasoning: This would increase customer knowledge of available discounts and encourage vegan and other EF-reducing products. Word of mouth advertising is a strong marketing tool.

3: Replace the current flour with organic flour in the baked goods.

Reasoning: This would contribute to the lowering of ecological footprint by having less environmental impact. Organic flour could be gradually incorporated into the cookies to see customers' acceptance of organic products and the increased price. Perhaps a mixture of both organic and normal flour could be a good start.

ii) For AMS Food and Beverage Department:

1: A mini poster about different AMSLFS initiatives could be displayed in the employees break room to help raise employee awareness.

Reasoning: In order for food outlets to inform students about discounts, the food outlet employees need to be kept up to date about AMSLFS i. Employee turn-over rates are very high and it is difficult to keep all of them informed about the AMSLFS initiatives regularly. A poster in break room can also help new employees to be aware of these initiatives.

2: Promote LOV products & Eating Ecologically Stamp Cards through different media such as various school papers (i.e. The Underground, Discorder, and Perspectives etc.), AMS student planner or the menu blackboard.

Reasoning: Increasing the AMS lighter footprint awareness & marketing of vegan products will encourage students to be more active in lower their EF. Printing the “Eating Ecologically Stamp Card” in the AMS student agenda would be a good idea as it will advertise and promote the usage of these cards as well as increase the visibility, knowledge and hopefully, consumption of lighter EF options.

3: Increase advertisement of available AMSLFS initiatives, such as pins/buttons that staff can wear on their uniforms, advertising and printing "eco-facts" on paper napkins (see Appendix A for templates).

Reasoning: Current attempts are somewhat effective, but increasing advertising in a form that students can carry with them can increase their chances of absorbing the information. Other ways of getting the ideas out there would be to advertising via school papers and exploring further marketing strategies.

iii) For future AGSC 450 students:

I: Follow up on the two proposed vegan cookies

Reasoning: Evaluation of success is useful to see impact of new items and whether vegan options are popular. If vegan options turn out to be popular, additional vegan recipes could be added to the menu.

2: Implement “compost me” stamps for napkins, take-out paper bags, and/or coffee cups (See Appendix A for sample template).

Reasoning: The stamps will remind and encourage people to compost items, instead of throwing them into the garbage. This will help reduce the amount of waste generated.

3: Suggest interesting and informative eco-friendly facts or phrases to be printed on cups, napkins, take out paper bags or beverage sleeves.

Reasoning: These could serve as an informative tool on the benefits of being eco-friendly. This idea works well given the fact that the AMS food outlets have limited room for posters and brochures. Also, people are more likely to look at something in their possession than a poster on the wall.

4: Implement or modify suggested template designs & produce eye-catching “eco-friendly” t-shirts, aprons and pins for employees of the *BCC* to wear.

Reasoning: These articles would help catch the attention of consumers as it would be visible during sales. It would also help increase awareness among employees about Eco-friendly days and other related events.

iv) For AGSC 450 Teaching Team:

1: Create a separate scenario group focusing specifically on marketing strategies for AMS lighter EF initiatives and products.

Reasoning: We feel that awareness is one of the key factors in getting people to make the right choices. Nancy Toogood (personal communication, April 6, 2009) also expressed interest in finding other ways to market the AMSLFS initiatives.

VI. CONCLUSION

The negative impacts that our current food system have on the environment is a rising concern. As populations grow and energy demands rise, the burden and the stress that it inflicts on our Earth only increases. However, through ongoing collaboration with AMS food outlets, the UBC Sustainability Office, and the AGSC 450 teaching team, AGSC 450 students like us have the opportunity to explore and implement ways to reduce these demands and ultimately work towards a sustainable future. Our group worked with *Blue Chip Cookies*, an AMS food outlet specializing in coffee and baked products, to implement ways in reducing "Ecological Footprint", mostly through the addition of local, organic, or vegan products. Through careful research, we decided that the most feasible way for this outlet to reduce its EF is through the incorporation of vegan products, in this case vegan cookies, into their menu. Although vegan products are negatively associated with taste, our results proved otherwise; the taste for our *Vegan Oatmeal Raisin* and *Vegan Oatmeal Chocolate Chip* both scored high on our taste test survey. This shows that vegan products have the potential to sell well and in doing so, will dramatically reduce the EF. In addition, we also worked with the AMS and helped them determine the effectiveness of their lighter footprint initiatives by conducting surveys. We realize that more awareness is needed to promote lighter footprint strategies to convince students about the benefits of choosing eco-friendly options. Though our work with *BCC* and the AMS may seem small and trivial at the moment, our efforts are significant in the long run and we are nonetheless moving forward in the right direction. With increasing universities, communities, and cities doing their part to reduce their EF, the idea of a sustainable world may not be far away.

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VIII. APPENDICES

APPENDIX A: SAMPLE TEMPLATES FOR PROPOSED ECO-FRIENDLY MARKETING STRATEGIES

Sample employee pins:



Sample template for 'Compost-Me stamp'



Ecological Footprint Facts



APPENDIX C: AMS MARKETING QUESTIONNAIRES

1. Would you be more inclined to buy foods that are local, organic or vegan if it is more ecologically friendly?

Yes No Maybe Don't care

2. Would you be willing to pay more for foods that are:

a) Local? Yes No Maybe
 b) Organic? Yes No Maybe
 c) Vegan? Yes No Maybe

3. Do you know about the 15-25 cent discount when you bring your own food or beverage container at AMS food and beverage outlets?

Yes No

4. Which AMS lighter foot-print initiatives have you noticed at the SUB and AMS food outlets? (Check all that apply)

Eco-Friendly Day Posters Compost bins
 Recycling bins Pamphlets Bring your own container discount
 Eco-Footprint Label (LOV) Compostable take-out containers
 Eating Ecologically Stamp Card Other: _____

5. Did you know that Eco-Friendly Day is the last Thursday of every month at the SUB?

Yes No

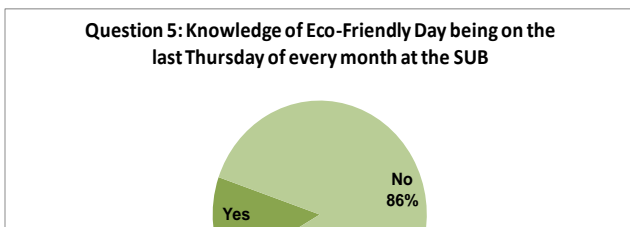
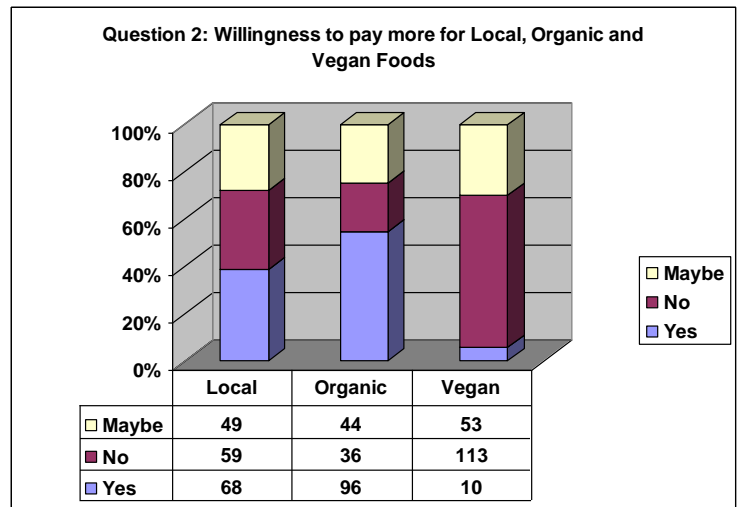
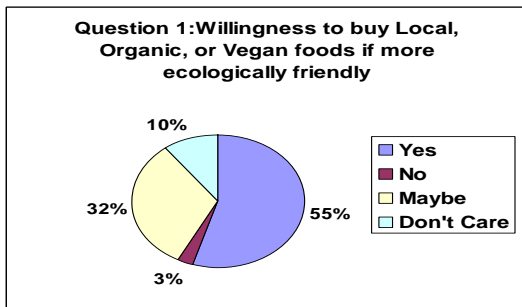
6. Have you ever taken part in Eco-Friendly Day activities (ie. Buying featured local, organic and/or vegan foods, speaking to a Eco-friendly promoter)?

Yes No Not sure

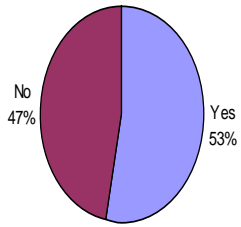
If you answered YES, has it changed the way you purchase food?

Yes No Maybe

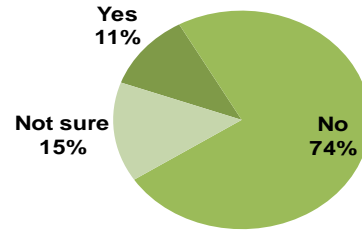
APPENDIX D: OTHER GRAPHS RESULTS OF AMS MARKETING QUESTIONNAIRES



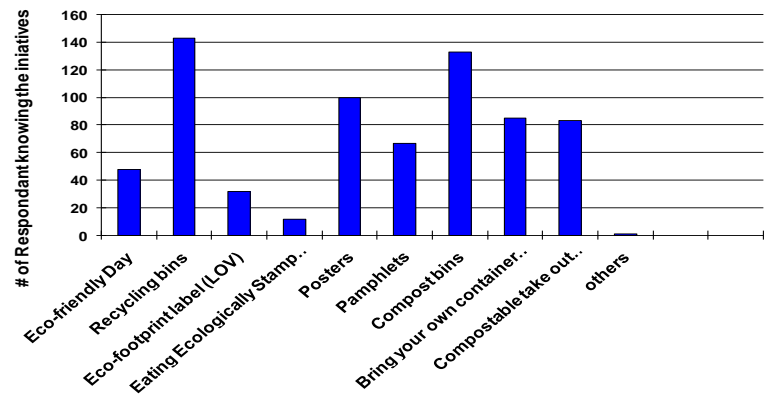
Knowledge of 15-25 cent discount when bringing own container at AMSFB Outlets



Question 6: Whether they have taken part in Eco-Friendly Day activities



Question 4: AMS lighter footprint initiatives noticed at the SUB and AMS food outlets



APPENDIX E: *PROPOSED VEGAN COOKIE RECIPES*

Recipe for Oatmeal Raisin Cookies	Recipe for Oatmeal Chocolate Chip Cookie
<p>1 recipe yields about 7-8 big cookies</p> <p><u>Ingredients:</u></p> <ul style="list-style-type: none"> 2/3 cup olive oil 2-3 tbsp apple sauce 2 tsp vanilla extract 2-4 tbsp soy milk or vanilla rice milk 1 1/3 cup quick oats 3/4 cup rice flour 1 cup whole wheat flour 1/4 cup tapioca starch 1 tsp sea salt/ regular salt 1 tsp baking soda 1 tsp baking powder 1 tsp cinnamon pinch (or 1/2 tsp) of nutmeg 1 1/2 cup light brown sugar 1/2 banana 1/2 cup sultana raisins <p>Soften the quick oats on the wet ingredients for 20 minutes, and then add the wet ingredients with the dry ingredients slowly at a time until moistened. After that, add the egg replacers: (1/2 mashed banana + 1/2 tsp baking powder) = 1 egg, and (1 tsp baking powder + 1/2 tsp baking soda + 2 tbsp flour + 3 tbsp water = 1 egg) and whipped until creamy; combine well, dough should be thick. Mound the batter into a ball and chill for an hour in fridge, and bake in oven at 375F for 10-15 min until golden brown.</p>	<ul style="list-style-type: none"> 1.5c flour 1 tsp baking soda 1tsp salt 3/4c canola oil 1 c brown sugar 1/3 c sugar (can substitute with brown sugar) 2 tbs soy milk 1 banana 2 tbs vanilla extract 2 c quick oatmeal 1 1/4 c dark chocolate chips 1/4 tsp cinnamon 1/8 tsp nutmeg <p>Preheat oven at 350 degrees. Mix flour, baking soda, salt, cinnamon and nutmeg together in one bowl. Mash the banana well, then mix canola oil, brown sugar, and sugar together until it forms a thick gel-like texture. Next, add soy milk and vanilla extract to the wet ingredients. Now add the wet ingredients to the dry ingredients and blend together well. Finally add the chocolate chips and quick oatmeal. Mixture should be fairly wet and should stick to your fingers. Scoop out the cookie dough onto cookie sheets and press down using wet fingers. Bake for 10-15 minutes, turning the cookie sheet once at about 6 minutes and enjoy!</p> <p>Please note: The cookies will not turn golden brown because of the lack of eggs, however they will darken in color.</p>