

**Reducing the Ecological Footprint of Pie R Squared: the Introduction of Cheese-less
Pizza**

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University of British Columbia

AGSC 450

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SCENARIO 3

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Group 5

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1. ABSTRACT

In order to alleviate the ecological footprint of Pie R Squared, the implementation of a cheese-less pizza into the current menu was pursued as a potential solution. Through conducting a pizza sampling survey, statistically significant data prove this strategy to be a viable option. Results indicate high consumer acceptance thus a high sales potential for the cheese-less pizza. In addition to having a lower ecological footprint, cheese-less pizza is vegan, lactose-free, has fewer calories and saturated fat, and has a great taste and appearance. Other strategies in lowering the ecological footprint of Pie R Squared focus on decreasing the amount of cheese and meat served by the outlet. Recommendations are made for Pie R Squared on how to implement the cheese-less pizza to promote sustainability, as other recommendations are made to future AGSC 450 students to further expand on current findings of the Food System Project.

2. INTRODUCTION

Ecological footprint analysis is the measurement of resource used and the waste generated, converted into equivalent land areas (Global Footprint Network, 2007). Currently, humanity's ecological footprint is 23% higher than the sustainable level, thus highlighting the need for its reduction (Global Footprint Network, 2007). The UBC Food System Project focuses on promoting a more sustainable food system by reducing the ecological footprint of AMS food outlets. AMS has taken the initiative to become carbon neutral by recently passing the AMS Environmental Sustainability Policy. Scenario 3 focuses primarily on rectifying current restaurant menus through either replacing menu items or creating a new line of food products. A reduction in dairy products such as cheese and meats is a potential strategy to counter-act high ecological footprints (EHPHP, 2007). These strategies were pursued by making recommendations on how vegetarian pizza options can be made available, and on how cheese can be decreased on both meat and vegetarian pizzas. Another means of becoming carbon neutral is to reduce the transportation of foods by growing and buying locally. The feasibility of having local

suppliers to provide for Pie R Squared was investigated, with emphasis on the UBC farm to further enhance the UBC's sustainability efforts.

In pursuing our focus, other venues were reviewed and analyzed for their eco-friendly tactics. This report focuses on Pie R Squared with emphasis on promoting a vegetarian cheese-less pizza as a means to reduce their ecological footprint. The main strategy is to market the taste of the cheese-less pizza over its ecological friendliness, as students are more concerned with the food's palatability.

2.1. Problem Definition

As environmental concerns increase globally, the UBC community has devised a plan to do its part in reducing the ecological footprint of the UBC campus. The AMS Council established the AMS Environmental Sustainability Policy (AMSESP) in 2007 and the AMS Lighter Footprint Strategy (AMSLFS), which was passed in March 2008. The AMSLFS requests that the AMS Food and Beverage Division (AMSFBD) make changes to decrease their ecological footprint. Each food outlet may accomplish these recommendations through menu changes which reduce ingredients of high ecological cost. Our task focuses on one outlet of the AMSFBD, the pizza parlour Pie R Squared. We intend to make realistic suggestions to the menu which will improve the outlet's sustainability.

The BC Government passed Bill 44: GHG Reduction Targets Act through legislation in 2007, which requires all Universities to be carbon neutral by 2010 (Penner, 2007). It is crucial that UBC follow these guidelines as they are a large community which can influence organizations both within and outside of their community. Practicing sustainability throughout the campus can encourage students to adopt smart waste management techniques and to be conscientious of the foods they choose to consume, as well as the impact they have on the environment. Improving the ecological imprint of the university will set a plan that may be duplicated by other universities and will demonstrate the possibility and importance to fight the environmental devastation that encroaches.

Foods today are shipped, flown, and trucked from all over the world. Local producers cannot meet the demands for the variety that our society is now accustomed to. Unfair market pricing allows

food from half way across the world to cost less than that produced locally, which further encourages unsustainable practices and pricing that does not reflect the actual cost to grow, fertilize, process, and transport food items. The AMSLFS outlines specific tasks to be carried out throughout the UBC campuses and by doing so is steering away from being a part of the global food system and becoming more dependent and encouraging of local and sustainable food systems.

The ecological footprint of foods falls within a large spectrum. One can think of the impact food has in many ways: how far food travels, how much energy is required to produce it, the quantity of resources used to process it, and how many consumable calories are left from all the combined efforts. Much of our meat and poultry are raised on factory farms which use antibiotics and hormones to keep animals alive in their tight, unnatural living environments (Pollan, 2006). Animals are fed 70% of grains grown in the United States many of which are grown with the use of fertilizers and pesticides (PETA, n.d.). All this combined with nearly half the water consumed in the United States is the cost meat and poultry have on the environment, making them of high ecological cost (PETA, n.d.). Farmed fish are fed fish meal from wild fish as well as grains which devastates natural habits and wastes grain and calories to inefficiently produce farmed meat (PETA, n.d.). Non-local foods that are transported into our marketplace may have been chemically treated to withstand transportation plus the environmental cost of shipment makes these heavy footprint items (University of Alberta ERSC, n.d.). Local foods travel short distances and therefore require less fuel, if these foods are organically grown or sustainably farmed their ecological footprint is even less (University of Alberta ERSC, n.d.). The ecological impact food has on the environment depends on many factors but overall, trends indicate that meat and foods from meat place a large toll on land and resources for the caloric load they provide.

2.2. Vision Statement and Value Assumptions

In preparation for this project, we set out to determine where we stand in terms of the guidelines set out for this project. As a group, we agree that supporting locally grown, produced, and processed food would reach the goal of a sustainable food system. However, shifting the food system towards

local food should be done gradually and carefully as there are many factors to consider. Solely relying on local food could be detrimental to the food system for several reasons: the unavailability of arable land, the non-optimal growing conditions (ex. temperature, humidity), and the nativity of the plant (some plants are only grown in certain areas of the world), all of which would reduce the variety of foods available in our society. We also feel it is essential to increase awareness of recycling and composting programs because the ecosystem can greatly benefit from recycling or composting of our wastes. We agreed that UBC has taken great strides to improve their waste management system, and other large corporations, companies and universities could adopt similar techniques. Ethnically diverse food is available depending on where you shop, and can be quite affordable, nutritious, and safe. However, having a variety of ethnic foods may imply importing food, which contradicts the first principle. Our group feels that education is an important aspect of a successful program as it allows consumers to understand the reasons behind the changes suggested, which further motivates people to enforce and participate in making a change for the environment.

We feel that food brings people together and enhances community. Food creates interaction between producers and consumers or between family and with greater direct interaction with food and its source, a stronger community can form. Food can possibly be produced by socially, ecologically conscious producers but would be difficult to achieve because of several factors. The majority of the producers have a profit-incentive; therefore, working with socially and ecologically conscious producers will only be achievable at a higher cost. The majority of us feel that growers are able to pay and receive fair prices through an economic concept, but will take a longer time because we would need to reach economies of scale or wait until the market reaches equilibrium for demand and supply of local foods.

As a group, we believe that these principles can be used as guidelines to lead us to an economical and sustainable environment; however, utilizing these guidelines should be done through a gradual process. We also believe that we should not eliminate non-local foods; gradually minimizing non-local

food seems to be a more achievable goal. This way we can promote a diverse selection of ethnic foods and allocate profits so growers receive fair prices all over the world and not just locally.

The similarities found in our assumptions are based on our participation in agricultural science courses. This faculty and its courses have increased our awareness of global issues around food sustainability, food security, and the severity of global warming. We come from many different cultures and from a diverse community ranging from small town home farms in BC and Hong Kong, to having been born and raised in the city of Vancouver. The personal values we each have brought to the group alter how we perceive this project, its importance, and the approaches we use. Family dynamics and socialization influence our personalities and how we work in a group environment. Our personal experiences expose us to influences that have shaped our belief system. Friends can impact the knowledge we gain and the biases we create around food, recycling and the way we interact with the environment around us. Education can contradict or empower our preformed assumptions and may introduce us to views we have never considered. Although we are all very unique individuals, we blended together well and were able to shape this project to suite our personal interests. We consider our views to be weak anthropocentric as we look at change in ways it can affect human life.

3. METHODOLOGY

3.1. Food Outlet of Choice

The journey we took to direct our project's focus was dynamic. The AMS outlets available to work with included Pie R Squared, The Pendulum and Blue Chip Cookie. We all agreed that choosing to work with one AMS food outlet would be more tangible than creating a line of eco-friendly products to be used by the AMSFBD. Since meat and dairy products have the heaviest ecological footprints (EHPHP, 2007), reducing ingredients such as meats, butter and cheese would be an effective way to reduce the ecological footprint.

Deciding between outlets was difficult. We looked at the menus of all three potential outlets.

Through research on ingredients and foods with highest ecological impact, we focused on menu items which used high quantities of meat and/or dairy. The menu of The Pendulum already contains many vegetarian choices and we felt that because the menu was so large, changing one item would not have a great impact. As for Blue Chip Cookie, the main items being sold there are cookies, pastries and coffee. Ingredients like egg and butter are essential in these bake goods. We felt it would be difficult to come up with good recipes that do not contain eggs and butter. Thus, we decided to focus on Pie R Squared. There is a wide variety of pizza toppings to work with to reduce the ecological footprints of the outlet.

We brainstormed ways Pie R Squared could improve their ecological footprint and came up with the following: to link some ingredients to be sourced from the UBC Farm, switch to a supplier that uses more local and organic produce, create a cheese-less pizza recipe, reduce the amount of cheese used per pizza, reduce the amount of meat pizzas served, increase the quantity of vegetarian pizzas served (especially during busy times), and create pizza pockets (which would reduce the need for lots of cheese as the contents are hidden by the pizza crust and replaced with sauce and flavours).

Upon further investigation and our meeting with Ms. Nancy Toogood, the AMSFB Manager and Mr. Robbie Bousadda, the Pie R Squared Manager, our list of ideas quickly narrowed. We discovered that the UBC Farm could not currently meet the demands needed by Pie R Squared for produce. Moreover, pizza pockets are already offered at another AMS outlet and not allowed to be duplicated. We then progressed towards other ideas, which included the incorporation of cheese-less pizza into Pie R Squared's menu. We set up another meeting with Mr. Bousadda and proposed this idea. However, we found out that he had recently come up with a cheese-less pizza recipe himself. The absence of cheese was compensated with more olive oil and seasoning (Robbie Bousadda, personal communication, February 28, 2008). The item had been served a few weeks prior without any form of advertising. We proposed to develop a marketing strategy and investigate the potential success of the cheese-less pizza among Pie R Squared's customers. In order to find out whether or not this was a feasible solution to mitigate Pie R Squared's ecological footprint, preliminary testing on customers was necessary. The

cheese-less pizza, while already developed, needed work to make it successful. We developed ideas to market the pizza by determining its benefits, surveying people's interest, as well as recommending other solutions Pie R Squared could incorporate to make their menu more ecologically friendly.

3.2. Background of Pie R Squared

Pie R Squared Pizza has been a strong participant in the Food System Projects in recent years with a proactive approach towards the goal of mitigating its ecological footprints. One of the solutions is the adoption of local food procurement, in particular through the UBC Farm. However, many concerns still need to be addressed before this can be a feasible solution.

3.2.1. Successful Achievement from the Past

Last year, Pie R Squared implemented a pizza recipe developed by AGSC 450 students which generated profit for UBC farm and also decreased the outlet's ecological (Robbie Bousadda, personal communication, February 28, 2008). The butternut squash was produced organically and thus had a much better colour and taste compared to the conventional variety. Although the operation lacked strategic marketing initiatives, the butternut squash pizza still became a very popular item at Pie R Squared due to its delicious taste (Robbie Bousadda, personal communication, February 28, 2008). Ever since the menu's implementation, over 500lbs of butternut squash have been purchased from the UBC farm (Robbie Bousadda, personal communication, February 28, 2008).

3.2.2. Current Consumption Trend

The consumption ratio between vegetarian and meat-based pizzas used to be roughly 1:15 in early 2000 (Nancy Toogood, personal communication, February 28, 2008). Today, due to the widespread benefits associated with vegetarianism, the ratio is approximately 1:3 (Nancy Toogood, personal communication, February 28, 2008). It is also observed that meat-eaters often buy both meat-based and vegetarian pizzas because of their unique tastes (Robbie Bousadda, personal communication, February 28, 2008). As a newly acquired manager at Pie R Squared, Mr. Robbie Bousadda is constantly working on new vegetarian pizza recipes that incorporate locally produced ingredients. Pie R Squared's ultimate goal is to enhance the purchase of vegetarian pizzas through the marketing of taste and health

benefits rather than focusing on its environmental friendliness (Robbie Bousadda, personal communication, February 28, 2008). After all, Mr. Bousadda firmly believes that students will prioritize the food taste over its impact on the environment.

3.3. Relevant Findings

The AMS Food Services have switched between food suppliers throughout the years in order to support “local” food procurement program (Nancy Toogood, personal communication, February 28, 2008). AMS Food Services purchase its meat from Grimm’s Find Food Limited, Fleetwood Food Services, and Schineider Foods Inc. The raw meats are usually imported, but all of the processing methods are done locally (Nancy Toogood, personal communication, February 28, 2008). AMS’s prodigious demand for cheese is sufficed by Saputo Food Limited, a local food operation that specializes in cheese production (Nancy Toogood, personal communication, February 28, 2008).

The procurement of local vegetables has always been a challenge for the AMS Food Services due to seasonality and price issues (Nancy Toogood, personal communication, February 28, 2008). The procurement of locally produced organic foods may mitigate our ecological footprint exponentially, but the high cost associated with it makes it an unfeasible option, especially for students (Nancy Toogood, personal communication, February 28, 2008). Centennial Food Corporation is a local food company that supplies most of the vegetable for AMS. During times of local shortages, vegetables are imported from places such as California or Mexico in order to keep the prices low (Nancy Toogood, personal communication, February 28, 2008).

3.3.1. Initiatives in Reducing Ecological Footprint Done by Other Institutions and Businesses

1. Fairmont Hotel and Restaurants

The Fairmont Hotel and Restaurants have been around since 1907 and have contributed to environmental sustainability through recycling, reducing green house gas emissions, conserving energy, and providing organic and local ingredients on their menu (EL, 2007). The restaurants have participated in the Ocean Wise Program and the Green Partnership Program (FHR, 2008), and are

constantly implementing new ideas to reduce their ecological footprint. The restaurants implemented the 100 Miles Buffet, the farmer-chef meet and greet event, and the Eco-cuisine menu (FHR, 2008). They have also started businesses with local and organic food providers like Rodney Strong Vineyard (GLN, 2007). The Rodney Strong Vineyard utilize solar power to produce wine, an influential factor that has lead Fairmont to choose Rodney Strong Vineyard as their wine provider because of the focus on energy, soil and water conservation (GLN, 2007).

Fairmont restaurants are also increasing their businesses with various local and organic food providers. Fairmont restaurants have shown efforts by serving local and organic food on their menu, as 20% of the food served on the menu are certified organic (GLN, 2007). Fairmont Hotel and restaurants encourage the use of local products through the farmer-chef meet and greet event. In this event, farmers and chefs meet to exchange ideas on how to promote and use sustainable food in their menus (GLN, 2007).

The Fairmont restaurant at the Vancouver Airport was one of the earlier restaurants to join the Ocean Wise program. The Ocean Wise program “promotes use of sustainable seafood” (OP, 2007). The Ocean Wise Program is a free program sponsored by the Vancouver aquarium and involves many well known restaurants. The Ocean Wise Program began in 2005 and in 2008, there are over 108 restaurants participating (VA, 2007). Restaurants of all classes are readily involved with the Ocean Wise Program; by participating the restaurant’s menu will have to follow certain guidelines. First of all, the restaurant must remove unsustainable items from their menu and replace them with sustainable items. The restaurant must do this every 6 months until they cannot remove any more unsustainable items (OP, 2007). On the menus, an Ocean Wise logo will appear beside each ocean-friendly item so consumers can easily identify these items. An ocean-friendly item “must be in abundant supply and harvested without damage to the habitat or other species” (OP, 2007).

2. C Restaurant, NU restaurant, and Raincity Grill

Harry Kambolis, the owner of C Restaurant, NU Bar and Lounge, and Raincity Grill, has been supporting sustainable practices and incorporating environmental programs in his restaurants (UD, 2007). All three restaurants participate in the Ocean Wise Program, and C Restaurant is named the Ocean Wise Founding Restaurant Partner (VA, 2007). C Restaurant's menu consists mainly of fish and other seafood, and a majority of them are Ocean friendly items. In addition, C Restaurant tries to use up the whole fish rather than using parts because it reduces waste (VC, 2001). All of Kambolis's restaurants promote the use of "local and sustainable harvested foods" (UD, 2007). He created the Hi-Res-Lo-Imprint module, which emphasizes his business's enthusiasm toward reducing environmental damages. In addition, Kambolis has cooperated with the Wisent Environmental, which promotes environmental ideas. By working with Wisent Environmental, "Kambolis and his restaurants will conserve approximately 58 trees, 563 pounds of land-filled waste, 2,400 pounds of green house gas (CO₂) and 35,948 gallons of water this year" (UD, 2007). Raincity Grill has also implemented the 100 Miles buffet. This 100 Miles buffet is an approach to reducing the ecological footprint since the food served in the buffet came within 100miles of the restaurant (SE, 2007). Reducing the distance traveled by food can lower the impacts food have on the environment.

3. Simon Fraser University (SFU)

SFU has participated in reducing their ecological footprint by improving their menus. One example is the Residence Dining Hall which includes locally grown foods on their menu. They are also members of the Ocean Wise program (SFU, 2008). Residence dining offers different dishes everyday, and customers can easily identify Ocean Wise products on the menu. Residence dining offers Ocean Wise items like Smoked Salmon and Cream Cheese and sustainable food options such as the "green plate special" (Chartwells). Suggestions can be made to Chef Murray Buick by email, which is indicated on the menu. Other food providers at SFU with sustainable initiatives include

Natures Garden Organic, a member of the Ocean Wise program and provider of locally grown foods, and Renaissance Coffee and Natures Garden Organic Deli (SFU, 2008).

3.3.2. Factors Governing UBC's Food procurement from the UBC Farm

Although buying food ingredients directly from the UBC Farm will enhance the reduction of Pie R Squared's ecological footprint, we need to overcome four primary concerns before this becomes a feasible solution.

1. Volume

Due to the farm's production capacity, the demand usually exceeds the supply for most of the items produced at the farm (Tim Carter, personal communication, March 12, 2008). Therefore, it is almost impossible for restaurants to rely on the farm as a sole supplier. Unless pre-arrangements are made prior to the production season, obtaining a large quantity of food produce from the farm will be very difficult (Tim Carter, personal communication, March 12, 2008). Yield unpredictability also have to be taken into account as climate factors attribute to differences in total yield each year (Tim Carter, personal communication, March 12, 2008).

2. Quality

Farm-produced items generally exhibit a much better nutritional and gustatory properties compared to conventional kinds as they were grown organically (Robbie Bousadda, personal communication, February 28, 2008). The butternut squash obtained from the UBC Farm were much sweeter than the conventional kind, which resulted in a tremendous success following the pizza's launch last year (Robbie Bousadda, personal communication, February 28, 2008).

3. Seasonality

Due to the Maritime climate we experience in Vancouver, certain foods can only be grown in certain months (Robbie Bousadda, personal communication, February 28, 2008). Consequently, restaurants need to seek imported food items in order to suffice its demand.

4. Price

The price of the organic produce at the UBC Farm will definitely be higher than the conventionally produced items. For examples, a pound of butternut squash at the UBC Farm is priced at \$1.50/lb, roughly a dollar more expensive than the conventional kind (Robbie Bousadda, personal communication, February 28, 2008). A way to decrease the cost is through commitment and the aggregation of demands, since economies of scale lowers the cost exponentially when there's a higher demand.

3.3.3. Current Production Trend at the UBC Farm

Some of vegetables and ingredients produced in large quantities at UBC Farm include mixed greens, potato, garlic, winter squash, beets, carrots, tomatoes and beans (Tim Carter, personal communication, March 12, 2008). Soil fertility, sunlight exposure, and average temperature favored the production of these items (Tim Carter, personal communication, March 12, 2008).

3.4. Survey

In order to analyze the prospect of the cheese-less pizza, we have decided to conduct a survey during the pizza sampling at Pie R Squared. Customers were offered a sample of pizza upon signing a consent form, acknowledging their willingness to participate in the survey. Customers were not informed that the pizza was cheese-less prior to sampling, however upon completion of the survey they were acknowledged that the pizza is vegan-friendly, cheese-less, and more eco-friendly. This technique of non-disclosing information was used to avoid biases during the survey.

The survey form is attached in Appendix A. The rationales of each survey question will be discussed in the same order as in the actual survey.

1. How often do you buy pizza from Pie R Squared?

Our survey was conducted during a “slow” business hour and we want to know what percentage of the participants are regular customers of Pie R Squared. The opinions of regular customers will

influence the success of the new pizza more than non-regular customers. However, it will also depend on other factors such as lactose-intolerance and diet preference (i.e. vegan).

2. How would you rate the taste of this pizza?

It is important that the taste is acceptable for the pizza-lovers. The fact that this new pizza is cheese-less may turn away customers before they even try it (and thus we do not inform the nature of this pizza to the customers). A high average of rank means the success of this pizza will be well-supported by its flavour acceptability.

3. Is the pizza tasty and flavourful?

Some people may think that the flavour in a pizza comes from the cheese (and thus the marketing of cheese-filled pizza crust and the marketing of extra-cheese pizzas). If the majority of participants think that the pizza is tasty and flavourful, the chance that the product fails due to the lack of taste is decreased.

4. Would you buy this pizza?

It is very important to know how likely are the participants to purchase this product when it is actually sold at Pie R Squared. While the taste of the cheese-less pizza may be acceptable, some participants may still prefer the taste of other pizza varieties at Pie R Squared. We need to ensure that customers are willing to buy this pizza on top or instead of their regular favourites.

5. Are you a vegan?

This cheese-less pizza is vegan-friendly and thus allows vegetarians and vegans to consume it. However, we also think it is interesting to see what percentage of non-vegans is willing to purchase this pizza.

6. Are you lactose intolerant?

This cheese-less pizza is safe for the lactose intolerant and thus allows them to enjoy pizza as the lactose tolerant do. We are hoping this will further expand the consumer base of Pie R Squared.

7. Would you pay a higher price for an environmentally-friendly food?

The result of this question will help Pie R Squared determine whether they should proceed with the incorporation of the cheese-less pizza into their regular menu, even if the price turns out to be higher than their existing pizza varieties.

8. What would you change about this pizza?

Any inputs regarding taste, appearance, or the odour of the cheese-less pizza will be useful for future improvements.

3.5. Marketing

Currently Pie R Squared has already introduced cheese-less pizza into their menu in anticipation of the 2008 UBC Food System project. They have been selling two cheese-less pizzas a day to familiarize customers of this pizza option. Nonetheless, we recognized the great benefit of having a marketing and advertising strategy for cheese-less pizza. Customers can be opposed to change, as many people stick to what they like. Marketing tactics can, however, play a significant role in convincing people to try something new. The novelty of a menu item can also bring intrigue and inquiry from customers who wish to sample such a product, as uniqueness and novelty are main characteristics of a food product that make it successful in the market. Cheese-less pizza is a very novel and contradictory food item. There can be an expected reluctance by customers for trying such a pizza as pizza is known for its cheese topping.

Having said this, advertising cheese-less pizza and highlighting its benefits can bring customers in, and have them sample the item. Our approach was to emphasize key components of cheese-less pizza that would help market it. Cheese-less pizza is a new concept to the North American diet, however, consumer trends are changing as the awareness of food allergies, intolerances, and health benefits begin to emerge (Fleming, 2008). Cheese-less pizza may have the potential acceptance to make it into mainstream pizza menus in the near future. Several reasons can convince consumers of the benefits for trying or switching to cheese-less pizzas:

1. Lower Ecological Footprint

Meat and cheese are the main contributors of an increased ecological footprint. With the absence of both cheese and meat, the ecological footprint can decrease and is thus a means to be sustainable and 'go green' (Global Footprint Network, 2007). Consumers are more aware of the 'green' movement that has been emerging in recent years. As many like to start making a change, eating cheese-less pizza is a much simpler means of doing so with no negative drawbacks to the consumer.

2. Lower fat and calories

Without cheese, taste must be compensated with added ingredients and seasoning. At the same time, the fat and calories associated with cheese is eliminated. Mozzarella contributes 13 grams of saturated fat and 300 calories per 100 gram serving (US Department of Agriculture, 2007). The health conscious consumers can enjoy a favorite food item without guilt, as it would decrease their saturated fat and caloric intake as opposed to a regular vegetarian pizza. In addition, the Greek Salad recipe of the cheese-less pizza, provided by Mr. Bousadda's, has zero cholesterol in comparison to regular Greek Salad pizza. The cheese-less pizza also has substantially less sodium than regular vegetarian Greek pizza. This information is based on a nutritional analysis we conducted on conventional vegetarian pizza at Pie R Squared to the Cheese-less pizza (See Appendix B). Marketing such nutritional benefits can aid in the acceptability of this new menu item.

3. Great for Vegans & Lactose Intolerant Individuals

Cheese-less pizza can satisfy the cravings of vegans and the lactose-intolerants. Vegans, those who exclude all animal-derived foods (including meat, poultry, fish, eggs and dairy products) can eat cheese-less pizza risk-free (Whitney and Rolfes, 2005). The lactose-intolerants, those who have the inability to digest lactose, have the benefit of no cheese being present on their pizza. Cheese-less pizza has the means of targeting two large groups of consumers many of which would otherwise be driven away from the outlet, simply because menu items are not geared towards their diets.

Capturing such groups, can bring in more customer base while promoting the importance of decreasing one's ecological footprint through the foods they eat.

4. Less expensive

Depending on ingredients used, the cost of cheese-less pizza can lower the cost of producing the pizza, and consequently can sell for less. Many food choices are made based on price, and the price alone can play an important role in the success of cheese-less pizza. Customers can be more inclined to buy the pizza as it would be the best value in comparison to other pizzas on the menu.

5. Better Taste & Appearance

Cheese tends to mask certain flavors of vegetables and seasonings. Without cheese, pizza can have a dramatically different and better taste with the correct use of seasonings and vegetable combinations. The quality difference in cheese-less pizza is a promising factor in promoting the pizza to a wide range of customers. Generally, vegetarian pizza is more appealing than meat pizzas and can thus influence a customer to consume the vegetarian cheese-less pizza over a meat pizza.

With the success of cheese-less pizza, Pie R Squared can make a significant contribution to the AMS Lighter Footprint Strategy. Not only would they be reducing their ecological footprint by serving no meat, or cheese on a pizza product, but would be fulfilling customer satisfaction at the same time. The goal for Pie R Squared in reducing their ecological footprint should also be to make sure their clientele are happy with the products they deliver.

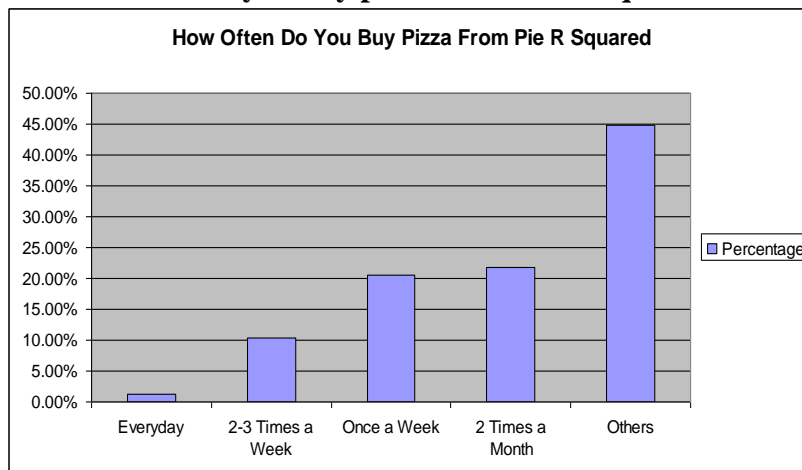
4. RESULTS AND FINDINGS

4.1. Results

The cheese-less pizza sampling was conducted on March 26, 2008 at Pie R Squared Restaurant. Questionnaires were given to the participants separately after the gustatory evaluation to record their

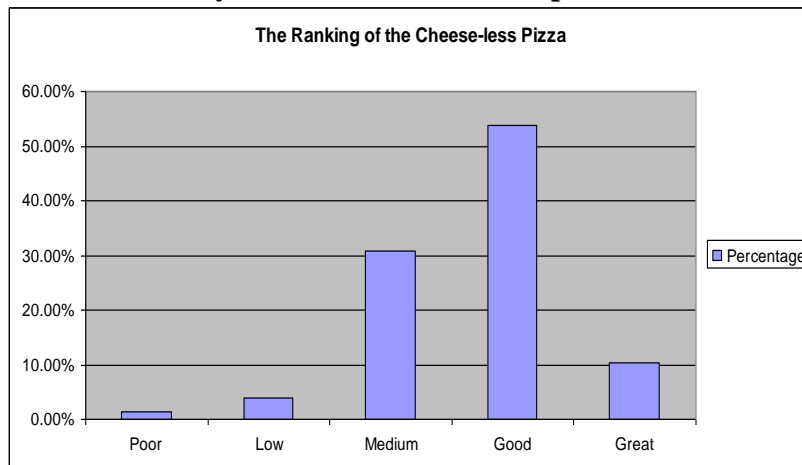
responses. The data have been compiled into bar graphs in order to allow a better understanding of the final outcomes.

1. How often do you buy pizza from Pie R Squared?



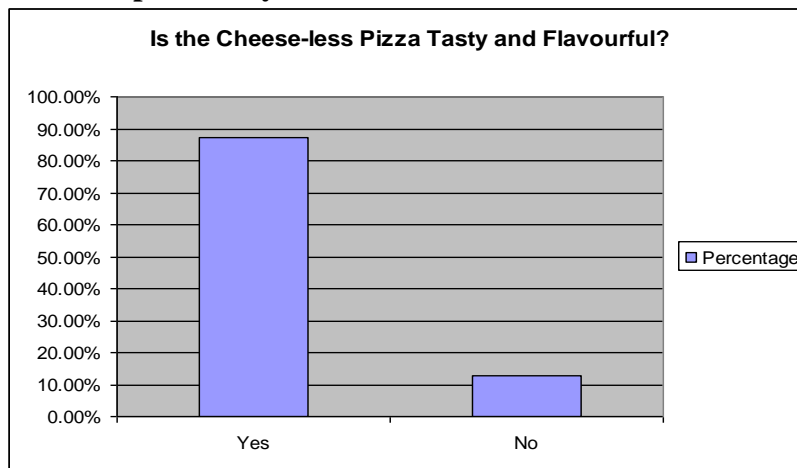
As indicated by the graph, only 1.3% of the survey population obtained pizzas from Pie R Squared everyday, 10.30% obtained pizzas from the store 2-3 times a week, while 20.50% obtained pizzas from the store once a week. Yet, 21.80% obtained pizzas from the store 2 times a month.

2. How would you rate the taste of this pizza?



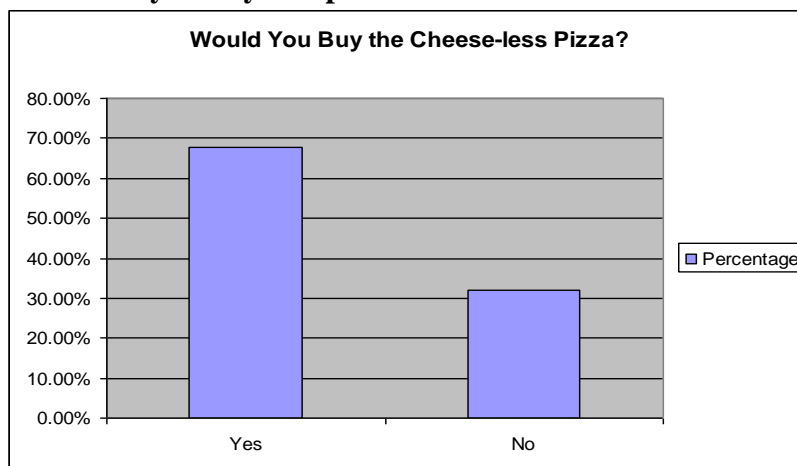
In terms of the taste, 30.80% of the survey population felt the pizza tasted mediocre, 53.80% thought the cheese-less pizzas had a good taste, and 10.30% felt the pizza was great. Only 5.1% of the sampling population disliked the cheese-less pizza.

3. Is the pizza tasty and flavourful?



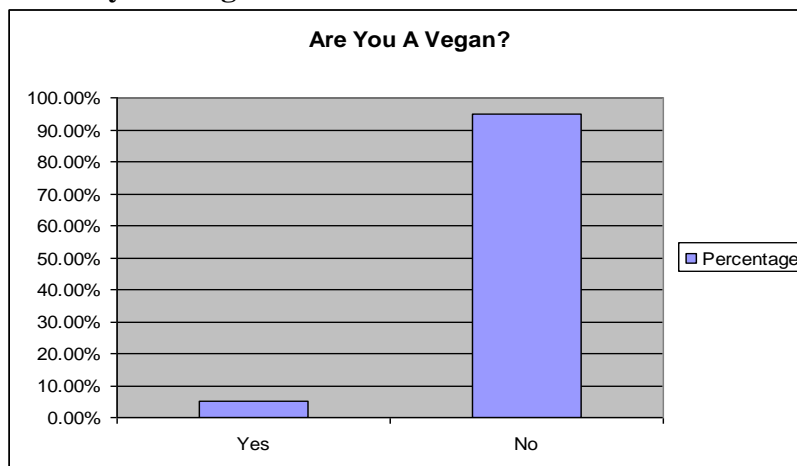
An overwhelming 87.20% of the survey population thought the cheese-less pizzas were delicious, while only 12.80% of the population did not like the taste of the new recipe.

4. Would you buy this pizza?



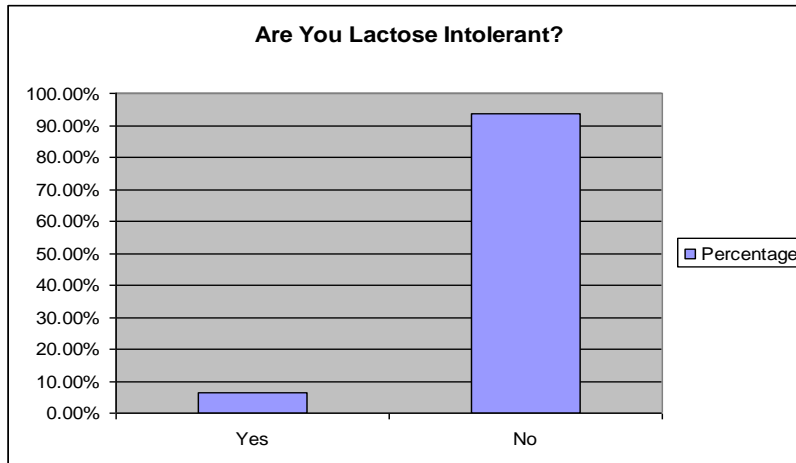
A positive 67.90% of the sampling population said they would buy this pizza if it is sold.

5. Are you a vegan?



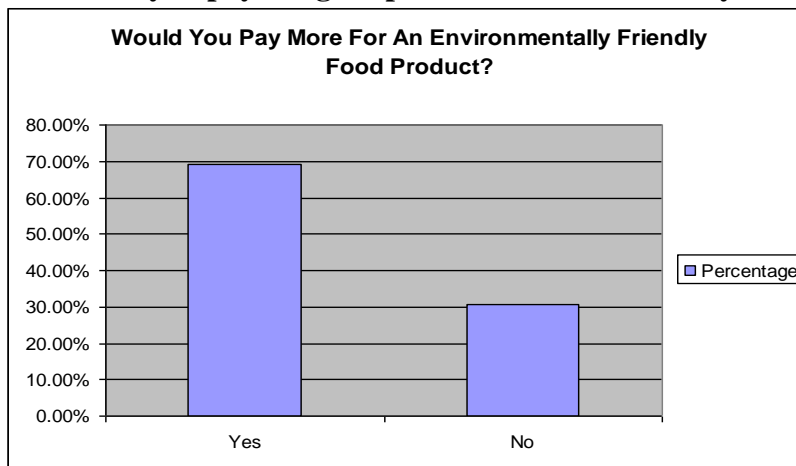
Of the surveyed participants, 5.10% were vegans and 94.90% were not.

6. Are you lactose intolerant?



Of the surveyed participants 6.40% were lactose-intolerant and 93.60% were not.

7. Would you pay a higher price for environmentally friendly food?



A surprising 69.20% of the survey participants said they would actually pay more for an environmentally friendly product, and 30.80% indicated that they would not pay the higher price.

The top three recommendations to improve the cheese-less pizza from the survey feedback include: 1) add a balsamic glaze, which will also address suggestions to increase salt and flavour, 2) add more sauce, and 3) make this item available year round.

4.2. Central Findings

The majority of samplers thought the cheese-less pizza was tasty, and were willing to buy the pizza even if it comes at a higher price to them with less cost to the environment (See Section 4.1.). The data greatly supports our incentive to introduce the cheese-less pizza to AMS consumers as a regular menu item since the pizzas taste rated so high. In the survey results, many participants made the recommendation of adding more salt or flavour to the pizza. For example, one participant even suggested adding a balsamic glaze which we feel would address both issues of salt and flavour while adding to the mouth feel of the item.

4.3. Limitations of Surveys

Although the sampling survey was more difficult to conduct than we thought, everything ran smoothly. Before doing the survey, we assumed free food would be attractive enough for people to complete the survey. However, many people wanted to know what type of pizza we were serving. Our aim was to keep the type of pizza unknown until after participants had sampled to avoid bias but we did on occasion inform potential participants that the pizza was vegetarian. For some this information allowed them to participate but for others with this information they declined our offer. It was difficult to capture the attention of vegans or lactose intolerance individuals because they may have been reluctant to participate. It is likely that vegans and individuals with lactose intolerance avoid pizza shops as most or all the items contain foods they both would avoid. Since we were trying to reduce the bias by keeping the type of pizza confidential, there would consequently be even less of a chance that these individuals would be in our sample population.

The objective of the survey was to find out people's opinion on the cheese-less pizza. There were a few participants who completed the survey before tasting the pizza which limits their true response and the purpose of the survey. A question that arose after the surveys had been completed was: Do men and women look for different things in a pizza and if so how would that influence their answers? To account for this potential gender difference we could have added a gender defining question to the survey. In an

attempt to get a true representation of AMS patrons we tried to ask everyone that walked by Pie R Squared while we were sampling. Although there were great intentions not every person walking by could have been asked because once a participant volunteered we had to assist them with signing the consent form and explaining the procedure of sampling then completing the survey. Overall the surveys were done well and the information obtained was influential.

5. RECOMMENDATIONS

5.1. Recommendations to Pie R Squared

The AMS Food and Beverage Department can work together with Pie R Squared to help implement the cheese-less pizza in the following ways:

1. Cheese-less pizza can be slowly phased into the menu in addition to the two pizzas per day. We recommend a “Go Cheese-less” day as a promotional day to give recognition to the new pizza item. On this day, the cheese-less pizza can be part of the other pizzas being made that day, so it is available for customers to try. We recommend increasing the number from two pizzas per day, to one cheese-less pizza to every meat pizza for the entire day. “Go Cheese-less” day can bring attention to the pizza that otherwise may go unnoticed, and increases the probability of having customers try the pizza. Flyers (see recommendation 2) can also be distributed on this day to for promotion.
2. The promotion of cheese-less pizza can be done through flyers and posters in the vicinity of the Pie R Squared outlet. Table flyers such as those found in the Appendix C can be place on the tables for customers to read as they enjoy their pizza. Flyers found in Appendix D could be placed near the cash register and by the pizza station. These flyers can be taken by customers for their information which could then spread into word of mouth advertising. In addition to take-away flyers, a menu board or poster should be displayed just outside of the outlet in a large and

noticeable size. This menu board should clearly state the name of the pizza and the toppings that it includes.

3. Promote one day of the month being “Eco-Friendly” where all pizzas sold will be vegetarian. If not feasible, it can be promoted as particular hours of the day in which only vegetarian pizzas will be sold along with the cheese-less pizza. This would target the vegan population. that would otherwise.
4. Pie R Squared advertised on page 131 of the 2007-2008 AMS Agenda which is given for free to students in September. This advertisement emphasized the new renovations and faster service. It was very noticeable and informative for all students. We recommend advertising Pie R Squared’s effort in doing their part in sustainability for the 2008-2009 AMS agenda.
5. We recommend adding a coupon in the 2008-2009 AMS Agenda for cheese-less pizza. Coupons are an easy way to bring in new and old customers. Deals are great promotional tool in helping make a new food item successful.
6. The current ratio of meat to vegetarian pizza is 3:1. We recommend reducing this ratio to 2:1. For example, if three pizzas are made at a given time, we recommend that two of these pizzas be vegetarian options with the other one being the meat option. Customers often will opt for the vegetarian because it is the next best thing. This should be done in the hours in which the outlet is busiest. Also, vegetarian pizzas are often more esthetically pleasing, and seeing more of these options can trigger customers to buy the vegetarian pizzas.
7. We recommend the reduction in cheese by 50% on all meat pizzas. Meat-lovers will still have the option of eating meat pizza, but are still making efforts in reducing their ecological footprint by the reduction in cheese. This can be done slowly in the span of a 5 months, whereby the cheese can decrease by 10% per month.

8. We recommend the cheese be reduced by 30% on all vegetarian pizzas. The cheese reduction can be done by 6% over the span of 5 months to coincide with the reduction in cheese in the meat pizzas (as above).
9. One of the most important ways to reduce waste is to reduce excess packaging. Pie R Squared can let their suppliers know about their efforts in reducing waste, and ask for products to be shipped with minimal packaging. Pie R Squared could also ask suppliers to take back and re-use their shipping boxes and pallets.

5.2. Recommendations to Next Year AGSC 450 Class

1. Currently, the UBC Farm is looking into redistributing their production to 33% in Saturday Markets, 33% in direct sales to local suppliers and 33% in community shared agriculture. Future students in AGSC 450 can look into the feasibility of connecting Pie R Squared with the UBC farm as a supplier of local vegetables, once this goal is reached. Student can investigate what vegetables the farm can increase production of in the future.
2. We recommend AGSC 450 students develop a line of cheese-less pizzas that are unique and look into advertising them as healthier options. We recommend developing recipes that promote certain health issues that can help bring in new customers and promote the pizza.
3. We recommend AGSC 450 students look into local suppliers that can meet the requirements of Pie R Squared that can potentially supply for the outlet. Students should look at the popular vegetables used and devise a plan on obtaining these items from local suppliers.
4. Future AGSC 450 students may wish to look into the use of meat and cheese alternatives for pizzas. Students should look into and compare the ecological footprint of these alternative products and the real ones, to evaluate whether switching to these products in fact reduces Pie R Squared's ecological footprint.
5. We recommend future students to conduct a survey of UBC students in the early phases of the UBC Food System Project. This questionnaire should assess what influences people's food

choices at the AMS outlets. Students should look into what tastes and quality of product customers expect. This can help them direct their focus on specific products or outlets. This preliminary survey can help address which issues the AGSC 450 students should focus on.

6. CONCLUSION

Reducing the ecological footprint of the UBC Campus can be accomplished through the reduction of cheese and meat in restaurant menus. The strategy chosen for this project was the implementation of a vegetarian cheese-less pizza in addition to recommendations on reducing cheese on both vegetarian and meat pizzas. In researching ways to reduce the ecological footprint of Pie R Squared, marketing strategies were developed which include flyers, coupons, and posters. These can help promote the great taste rather than its eco-friendliness. Other benefits associated with the consumption of the cheese-less pizza could also be used to help promote this new recipe. The survey results indicate potential for the cheese-less pizza to be well accepted by Pie R Squared customers. The findings reveal that the flavour and taste were rated high for the cheese-less pizza which address Mr. Bousadda's objective of enhancing sales through palatability. The most relevant recommendations obtained from the survey include: the addition of a balsamic glaze and more sauce. In conclusion, we encourage the incorporation of the cheese-less pizza into Pie R Squared's menu as it has great acceptance based on taste, which satisfy customers while the outlet makes strides to reduce its ecological footprint.

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8. APPENDIX