

UBC Social Ecological Economic Development Studies (SEEDS) Student Report

**The Ubc Farm: Essential To The Sustainability Of The Food System At The University  
Of British Columbia**

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**THE UBC FARM:  
ESSENTIAL TO THE SUSTAINABILITY  
OF THE FOOD SYSTEM AT  
THE UNIVERSITY OF BRITISH COLUMBIA**

**March 31, 2004  
AGSC 450/001**

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## **ABSTRACT**

This paper is an integrative document aimed at improving the sustainability of the food system at UBC. More specifically, this paper looks at the role the UBC Farm can play in improving the sustainability of the greater UBC food system in which it plays a part. In order to do this, we have identified a core set of values to guide our investigation, developed a model, created methods of data collection, and finally, made recommendations to the UBC office of Campus Sustainability. Our recommendations emphasize the connections between the ecological, social, and economic components of the food system at UBC, and give equal weight to each component. Furthermore, this document is cognizant of the fact that in order to achieve overall sustainability within a system, every component itself must be wholly sustainable. It is the hope of this paper that through improving the sustainability of the Farm, we are strengthening one part of the UBC system, and thus contributing to the sustainability of the UBC Food System as a whole.

## **Group 14 INTRODUCTION**

### **Problems of the University of British Columbia Food System (UBCFS)**

*A system is “a set of arrangements of things so related or connected as to form a unity or organic whole,” (Webster, 2000). Sustainability is defined as meeting “the needs of the present without compromising the ability of future generations to meet their own needs,” (University of California, 1997).*

Based on the above definitions of a system and of sustainability, our group believes that for an entire food system to be sustainable, each of its individual components - social, economic, and ecological - must be sustainable. The UBC Campus Sustainability Office (UBCCSO) shares the view that attaining these three tenets is necessary to achieving overall campus sustainability (UBCCSO, 2004). It is important to note, however, that there are connections between each of these three branches, and achieving sustainability in one may positively or negatively affect the sustainability of another. To represent these relationships, we have employed the use of indicators that value the connections between each of the three components of the system, not just each component in itself. One problem that The University of British Columbia Food System (UBCFS) has is assessing its state of sustainability, a problem we have attempted to address through the creation of our indicators. Furthermore, this approach

allows us to identify whether an apparent unsustainability exists because of problems within one particular branch of sustainability or because one branch is negatively affecting another.

Indicators pertaining to social, economic, ecological, social-economic, social-ecological, and economic-ecological sustainability can be applied to the UBCFS as a whole, or they can be applied to each of its components. As presented in the guidelines for the AGSC 450, Sustainability of the UBCFS Collaborative Project III, some of these UBCFS components are: a student-run Agora, costs of locally-produced food, food mileage, and the UBC Farm (Rojas & Wagner, 2004). For the entire UBCFS to be sustainable, each of these components must be maintained with respect to each other. Only when each component of the UBCFS is deemed sustainable can the entire UBCFS be deemed sustainable as well. This follows from the idea that in a system, the whole is only as strong as its individual parts. The whole of the UBCFS can only be as strong and sustainable as its weakest component. Thus, if any one division is weak and unsustainable, then no matter how strong and sustainable the other parts are, the entire UBCFS will be unsustainable.

This report will discuss the UBC Farm. More specifically, we have looked at the potential of forming market relationships between the farm and on campus food providers, and how those relationships can contribute to the overall sustainability of the UBCFS. Currently, it is not known if the UBC Farm is sustainable or not. Because of this, we cannot determine if the entire UBCFS is sustainable since, as stated above, the sustainability of a whole can only be determined when each of its individual components has been addressed. If the farm is determined to be unsustainable, it may or may not be the “weakest link” UBCFS, but it would none-the-less negatively affect the overall UBCFS sustainability. It is a goal of this report to evaluate this sustainability, and if necessary, to find ways to improve it.

### **Value Assumptions: Weak Anthropocentrism**

Our group took a weak anthropocentric approach as our ethical perspective to analyze the UBCFS and the UBC Farm. According to Norton (1993), weak anthropocentrism focuses on nature’s value in human society, in addition to its human-centered view. As a group, we feel that it is important to realize

that the sustainability of the UBCFS relies on the synergy and relationships between each component - social, economic and ecological - of the system. Furthermore, we believe that the viability of each component of the UBCFS, such as the UBC Farm, also plays an important role in perpetuating the sustainability of the entire system. While we think that it is important to step back and decentralize our human values to preserve and protect the environment - as it is, after all, nature that supports the foundation of human activities (Dawe and Ryan, 2002) - it is almost impossible to totally abandon the existence of human identity and their interests (Plumwood, 1996). We feel this point is especially pertinent in an environment such as UBC where an enormous number of people are involved in the system. Because we believe that no single indicator is more or less important than the other ones, as they are all inter-related to each other, we have adopted the concept of weak anthropocentrism as our general approach to construct our model.

Although we believe that the sustainability of the UBCFS is a sum and balance of its social, economic, and ecological perspectives, there are limitations to achieve this balance. For example, the UBCFS is a massive, complex system that involves areas that are outside the physical boundaries of UBC. Because of the relationship between the UBCFS and the world, it is very difficult to simultaneously attain social, economic, and ecological sustainability in all systems, since differing systems have different perspectives. Furthermore, upon discussion in our group, we found that weak anthropocentrism somewhat ignores the sense of community and human interaction in society because it mainly focuses on balancing human needs and the protection of the environment. Hence, in our model, we have taken careful considerations in choosing our indicators representing the sustainability of the UBCFS and the UBC Farm, making sure that no one sustainability perspective dominates the others.

### **MODEL TO ASSES THE SUSTAINBILITY OF THE UBCFS AND THE UBC FARM**

In order to develop our model for this year, our group went through the models developed by the AGSC 450 class of 2003. Of all of them, we believe that the models of Groups 3 and 9 are the best ones. Of all of the models, Group 3's contained the most detailed descriptions of its "Sustainable-



Unsustainable” continuum, which measured the UBCFS on a scale of 1 to 5, with 1 being unsustainable and 5 being sustainable. Group 3 clearly explained in both qualitative and quantitative terms exactly what a ranking of 1, 2, 3, 4, and 5 meant. However, Group 3’s model (like all the other models of 2003) treated social, economic, and ecological sustainability as three separate entities and did not explicitly show the interrelationships between them. This is why our group believes that both Group 9 and Group 3 produced the best models of 2003. To represent the connections between the social, economic, and ecological indicators, Group 9 had three additional indicators: social-ecological, social-economic, and economic-ecological. These three “combination” indicators clearly showed the relationships between the other three.

Because we feel that the models of Groups 3 and 9 combined comprised the best of 2003, we decided to combine the two of them to come up with our model to assess the sustainability of the UBCFS. This model is presented in Appendix A. We, like Group 9, have six indicators of sustainability: social, economic, ecological, social-economic, social-ecological, and economic-ecological. The entire model with its indicators can be used to assess the sustainability of both the entire UBCFS as well as the UBC Farm. The methods we propose to measure each indicator in the UBCFS and at the UBC Farm are shown in Appendices B and C, respectively. Our indicators and methods of measurement are a combination of Groups 3 and 9. Note that the indicators and methods of measurement of the UBC Farm are similar to those of the UBCFS but are more specific to assess the farm directly, in accordance with our specific task. All of our indicators, like those of Group 3, are measured on a scale of 1 to 5, with 1 being unsustainable and 5 being sustainable. Thus, the scale presents a “Sustainable-Unsustainable” continuum on which to locate the UBCFS and the UBC Farm with respect to each of the sustainability indicators.

When using our model to measure the sustainability of a system (either the entire UBCFS or the UBC Farm), we feel that each and every indicator must have a value of at least 3 (neutral) in order to achieve sustainability. If any one indicator is below 3, then the entire system is considered to be unsustainable. Again, this is because the sustainability of an entire system is only as sustainable as its

most unsustainable indicator. As an example, let us say that we are assessing the UBC Farm. If five out of the six indicators are measured to be 4 (mildly sustainable) and the one remaining indicator is only 2 (mildly unsustainable), then the entire UBC Farm is considered to be mildly unsustainable. If just one part of the system is weak and unsustainable, then it does not matter how strong and sustainable the other parts are. The one weak and unsustainable part will make the entire system weak and unsustainable as well.

## **INSTRUMENTS OF DATA COLLECTION**

The instruments of data collection to measure each indicator of sustainability at the UBC Farm are located in Appendix D.

## **UBC FARM SUSTAINABILITY WILL HELP TO ACHIEVE OVERALL UBCFS SUSTAINABILITY**

As stated above and as shown in our model depicted in Appendix A, our group believes that in order to be deemed sustainable, a system must be socially, economically, ecologically, socially-economically, socially-ecologically, and economically-ecologically sustainable. We have created a list of indicators to assess these relationships that exist not only in the entire UBCFS but in its components as well.

### **Social Sustainability**

Our group believes that to achieve social sustainability in the UBCFS, foods provided in the UBC community must be highly available and acceptable. To become sustainable, it is important that foods produced by the UBC Farm, a part of the UBCFS, are sold at as many UBC food outlets as possible, that all methods of payment (cash, debit, and credit) are accepted at these outlets, and that people in the community perceive the food choices to be highly acceptable in terms of variety.

### **Economic Sustainability**

All components of the UBCFS must be profitable to become economically sustainable. To reach the economic sustainability of itself as well as the entire UBCFS, the UBC Farm, as a result, must be able to make enough revenue to not only cover costs of production but also to make a profit and then improve itself by furthering its goals of social and ecological extension.

### **Ecological Sustainability**

“A sustainable food system is one in which the health of the environment is sustained and enhanced for use by all beings and by future generations,” (Kloppenburger et al., 2000). In the case of the UBCFS, the health of the environment can be maintained by reducing food wastes. Food wastes such as non-biodegradable packaging materials can be recycled to reduce harm to the environment. In addition, the composting of organic food wastes can not only reduce the amount of solid food wastes at UBC (thus, reducing harmful emissions emitted from UBC’s landfill materials) but can also decrease the number of trips needed to transfer wastes out of the campus (UBC Waste Management, 2004). As a part of the UBCFS, the UBC Farm can be employed to decrease organic food wastes by using environmentally-friendly practices such as the use of compost as a fertilizer.

### **Social-Economic Sustainability**

Not only is the availability and acceptability of foods in the UBC community important, but so is its affordability. If foods provided by the UBC Farm are affordable and then sold in many food outlets on campus, then the overall affordability of foods on campus will increase.

### **Social-Ecological Sustainability**

Awareness or knowledge is another main feature of a sustainable food system. All members within a community must be able to gain knowledge about their food system. The knowledge must be easily accessible and widely distributed (Kloppenburger et al., 2000). In addition, community members must be well informed of the situation of their own food system and the concept of sustainability (Kloppenburger et al., 2000). A high awareness and knowledge of the UBC Farm and its role in the

sustainability of the entire UBCFS contributes to the awareness and knowledge of the UBCFS itself and its resultant sustainability.

### **Economic-Ecological Sustainability**

Food traveling great distances from field to table is environmentally and economically costly. It is environmentally costly because of the ecological costs associated with the recovery and combustion of the fossil fuels used to transport the food (Kloppenburg et al., 1996). It is also economically costly because of the costs of the large amounts of energy needed for transportation, packaging materials, and food preservatives (Kloppenburg et al., 1996). To ensure a sustainable food system, food mileage must be minimized. Thus, to become sustainable, almost all sources of foods used as ingredients or served by UBC and AMS Food Services that can be attained locally must be bought from local suppliers. Furthermore, the use of UBC Farm foods as food ingredients or served products can reduce the overall food mileage of the UBCFS.

## **IDENTIFICATION AND DESCRIPTION OF THE UBC FARM**

### **Guiding Values**

Upon evaluating the UBC Farm's current and past business models, it becomes apparent that this entity's decision making processes are guided by four steadfast values. First, the farm is constantly striving to attain a higher level of profitability, which is evidenced by the expansion of its marketing efforts and production area. Second, deemed to be an extension of the greater UBC food and education systems by its operators, the farm emphasizes hands on education to increase awareness about the benefits of locally based agriculture, as its production process pays tribute both to the environment and to the individuals that inhabit it. This is achieved by involving both students and members of the greater community with the Farm. Third, the Farm's operators adhere to production methods that strictly limit, if not eliminate, environmental degradation. One example of this is the incorporation of integrated pest management techniques instead of employing harmful pesticides. Fourth, although the Farm is not certified as organic, such principles do guide the Farm in its choices when it comes to production

methods. This, among other things, also attests to the businesses' human centered component as organic production does have accompanying health benefits.

### **Physical Description**

The Farm occupies forty acres of prime real estate on UBC's south campus. However, only about half of this area is currently being used for production. Crops are primarily centered on the most fertile and productive regions, which are considered to be on the eastern portion of the Farm - although even this area is not being used to its full potential. Furthermore, the Farm is outfitted with several free standing structures including four greenhouses, only one of which is currently in operation, the Hoop House. (see Appendix F for complete farm map). Moreover, it should be noted that by-laws for future development of buildings on the Farm state that structures are not to be permanent. New facilities cannot have a foundation nor can they be equipped with a permanent power supply, thus it is crucial to maximize the resources offered by the current buildings.

### **Current Production Methods**

In contrast to the contemporary and pervasive machinery based agricultural production techniques in North America, the Farm's production process is heavily reliant on human capital, as it is labor intensive. This is somewhat inefficient, even for a small farm, as required worker hours are long and their associated costs high. For example, weeding the farm by hand would take far more time and money than say a tractor suited for this same task. However, the latter method is unavailable as it requires a capital investment that, due to a shortage of funds, is out of reach at the present.

The Farm's staff members consist of a marketing coordinator, market garden coordinator, two laborers and about seventy volunteers. Temporal division of duties amongst the Farm's staff consists of 1/3 of time designated for marketing and 2/3 for production, which may be planned or simply consequential. Input costs other than salary expense are nominal and accrue to only about two-thousand dollars for the growing season, as fertilizers, seeds, energy and the like are either very cheap or free (Bomford, 2004).

In recent years, the UBC Farm has enjoyed an increase in its revenues from sales at the Market Garden and to campus food providers (personal communication with Mark Bomford, 2004). In 2002-2003, total revenues totaled \$19 742.64, compared with an estimated operating cost of \$60 000. Most of the sales at the farm occur between the months of June and October, a fact that highlights the seasonality of the farms operations. An exact breakdown of sales by month is available in Appendix F. Clearly, the Market Garden at the farm is running at a deficit, with the majority of the costs accrued to salaries for farm employees. However, despite this apparent shortfall, 2002-2003 showed the strongest revenues to date for the farm, and as production methods evolve and production area increases, revenues are expected to continue to increase in the upcoming years. Vegetables are responsible for the majority of the Farms revenues (53%), while pumpkins, eggs, flowers, and t-shirts made up the rest of the revenues. Furthermore, due to poor administrative planning in 2003, the farm missed an opportunity to sell all of its pumpkins, resulting in the spoilage of much of the crop. The staff responsible for marketing the pumpkins terminated its position at the end of October, despite a potential to sell pumpkins well into November. This shortfall is being addressed this year, a move that is anticipated to increase pumpkin crop revenues this year.

It is expected that vegetables will become even more important to the farm's revenues in upcoming years, as eggs will no longer be available for sale at the Market Garden. Historically, eggs were provided to the farm free of charge by the Avian centre, but that relationship is expected to end this year. There are many opportunities that exist for the farm to replace the lost revenue from eggs, which will be further discussed in the subsequent section on recommendations. For a more complete list of the strengths, weaknesses, opportunities, and threats of the UBC farm, please refer to the SWOT analysis in Appendix E.

### **Sales and Marketing**

Currently, the majority of revenue at UBC farm is collected during market day sales, which represent 57% of total sales by type. Sales to on campus food providers, such as Sage Bistro, St. John's

College, Green College and AMS food services make up only a small part of total revenues (approx. 8%), however, the fact that a relationship exists between the farm and these providers indicates to us a great potential for future relationships. Furthermore, the farm also has connections with off-campus components of the food system in place (both suppliers and consumers), such as the Good Food box and West Coast Seeds, which serve to strengthen the ties between UBC farm and the greater system of the City of Vancouver in which it plays a part. Nevertheless, we feel that as in the past, major sources of revenue for the farm in the future will lie in direct market relationships with consumers on campus, through initiatives such as the market garden and on campus food providers. Also, as will be elaborated on in the section on recommendations, we feel there is great potential for developing a direct relationship with on campus residents, particularly in Fairview and Acadia park residences, through an initiative of ‘bringing the produce to them’.

One way for the UBC Farm to increase its revenues is through effective sales and marketing strategies. For the most part, the sales strategy at the farm is in its very nascent stages, and has the potential to flourish if approached properly. It is the opinion of our group that there is no reason why the farm could not become a financially independent operation in the near future. The farm can achieve this goal through the increased use of current resources, streamlining of production processes, and building upon existing relationships within the UBCFS. It is also the hope of our group that this paper can be of use to the farm in enhancing its operations.

## **RECOMMENDATIONS TO THE UBC OFFICE OF CAMPUS SUSTAINABILITY**

The subject of this section will be to highlight the opportunities where we feel the UBC Farm has the greatest opportunity to increase its revenue, with the overall goal of having its market garden activities become financially independent. There are 6 major areas where we feel the UBC Farm can improve its operations with the goal of at least “breaking even” financially, each of which is outlined below.

### **Secure Contracts with On-Campus Food Providers**

The UBC Farm has an opportunity to further improve the sustainability of the UBC Food System by acting as an integral supplier of fresh produce. In order to do that, however, concrete relationships between the UBC Farm and other stakeholders in the UBC Food System, such as UBC Food and AMS Food and Beverage services, must be perpetuated. These relationships would have to benefit all parties involved and respect current contracts, as there are currently many purchasing barriers and constraints that would inhibit the expansion of long-term relationships between the UBC farm and UBC Food and AMS Food and Beverage services.

An important aspect of supplying food to the campus food services is year round availability (Yip, Parr, Toogood and Sewada, 2004). In order to stay economically viable, the food services must be able to satisfy consumer demand with a variety of nutritious foods that are available throughout the entire year. Unfortunately, although the UBC Farm provides produce that is nutritious, their variety is entirely dependent on climatic and environmental conditions. Consequently, they cannot produce much food during the winter season, which happens to be the most important time for the food services.

Since the UBC campus is in full operation during the fall and winter seasons, the campus food services and their various outlets must be able to supply adequate amounts of food on a daily basis. This means that the food services must be able to fully rely on their suppliers to provide sufficient quantities of food. Again, the UBC Farm cannot produce the volume nor selection of products that are required to sustain either AMS or UBC Food services (Yip, Parr, Toogood and Sewada, 2004). In addition, a significant volume of what the UBC Farm does produce is currently being sold at the Farmers Market, which could inhibit flow to other food providers (Parr, 2004).

Lastly, because ecologically sound production methods, such as not using fertilizers, pesticides or herbicides, form the basis of the Farm's principles, the harvested products do not always have the consistency in uniformity and size of conventionally grown products. Unfortunately, this is seen as a problem by many consumers and therefore is a constraint for the food services (Yip, 2004).



Aside from several constraints, there are also pertinent policies of the campus food services in terms of forming long-term relationships with the UBC Farm. For example, if the volume and selection of produce were in fact made available by the UBC Farm, then there would still be a need to work out several important details. To begin with, the current produce suppliers to UBC Food and AMS Food and Beverage services would need to be informed that they are no longer the exclusive providers to UBC (Parr, 2004). This would have to be done as an addendum to the current contracts (Parr, 2004). If the effect of this was significant in terms of volume reduction from the current providers, then it could have adverse effects on the UBC Food and AMS Food and Beverage service's purchasing price (Parr, 2004). This would result in limiting the overall success of food services' partnerships with both the current produce providers and the UBC Farm (Parr, 2004).

In addition, if a partnership with the UBC Farm was recognized, both food services would need to establish standards regarding such issues as the quantity and selection of needed products, delivery times, cleanliness of products, the produce's quality and uniformity in terms of appearance, and payment terms (Yip and Parr, 2004).

### **Cater Directly to Students**

The UBC farm has great potential in forging direct market relationships with students living on campus, a proposal that we view as a win-win situation. There currently exist few produce sources on campus, and they are limited to the few grocers in the UBC village. In order to gain access to fresh produce, campus residents (we will use the example of Fairview residence) need to either pay premium prices in the village, or take time out of their busy schedules to secure produce from an off campus location. This can be quite an undertaking for some Fairview residents, as they are located in an area of campus situated quite far from bus stops. By bringing produce to Fairview residence by means of a traveling cart or temporary stand, UBC farm can eliminate the middle man by selling directly to campus residents. In doing so, we believe they will be able to sell at prices comparable or cheaper than other providers on campus, while at the same time maintaining a healthy profit margin. We believe that the

costs associated with operating a stand on location in Fairview during certain hours of the day in the peak months of UBC farms production will be easily offset by added gains in revenue. Fairview residents benefit from the stand in that; their travel time to secure produce will be greatly reduced, prices will be comparable or cheaper to what they would usually pay, and they would experience a closer connection to the source of their food. By catering directly to students, the UBC farm will directly be enhancing the sustainability of the food system here at UBC.

### **Begin Interfaculty Involvement**

In an effort to enhance the presence of the entire UBC system within the farm, we believe that it is essential to foster interfaculty involvement at the farm. This involvement serves many purposes, some of which include greater awareness for the farm, an opportunity for the rest of campus to take advantage of the farms resources, and a chance for the farm to procure additional human resources. By creating a series of opportunities within the farm for students of various faculties, a symbiotic relationship is created. Students obtain the opportunity to gain hands on experience in different aspects of the farm (i.e. - botany students can study plants, engineering students can develop solutions for maximizing productivity of greenhouses, commerce students can work on sales and marketing, etc.), while at the same time gaining credits towards their degree. The farm can reap the benefits of the solutions offered by students working on these projects, all the while saving on costs of hiring staff to perform the same tasks. It should be noted that in order to efficiently create such a system of interfaculty involvement, a full time paid position of “involvement coordinator” must be established, in order to streamline the efforts of the students involved. In the past, there have been problems where training volunteers has cut into the time of full time staff to actually perform their roles, and it is hoped that this position will alleviate that burden. Furthermore, we believe the costs of creating such a position will be offset by the increased efficiency of the farms operations due to increased input activity.

### **Have Winter Production**

One of the major weaknesses of the current UBC Farm model is the seasonality of its operations. If the Farm could expand its operations to year round production, it would become more attractive to potential customers seeking a constant supply. There exist on the farm a number of greenhouses that sit idle for the winter – facilities that could be used to produce high margin crops such as tomatoes. One of these greenhouses, the Hoop house, has a boiler in place for heating purposes. Furthermore, the energy required to run this boiler comes at no additional cost to the UBC farm, as utility costs are provided free of charge by UBC plant operations (Bomford, 2004). This low cost of energy gives the Farm a competitive advantage over other growers of similar product, allowing the farm to undercut other providers of food without reducing its profit margin. If this venture proves successful, other greenhouses on the Farm could be outfitted with generators for heating purposes, creating the potential for more food production.

### **Forge Relationships with Agricultural Businesses in the Community**

Another major weakness of the UBC Farm is its lack of capital investment, for example, its tractor is over 20 years old. The procurement of certain mechanical assets has the potential to greatly increase productivity at the Farm, the source of which could be the business community in the surrounding area. Businesses have the incentive to participate in the Farms activities through opportunities such as an enhanced public image and tax write-offs. The exploration of such relationships is but one of the roles that could be fulfilled by students within the Faculty of Commerce involved with the Farm.

### **Take Advantage of Major Sources of Revenue**

By identifying the crops produced at the Farm that have the highest profit margin, the Farm can coordinate its crop planning accordingly. It should be noted that this recommendation does not advocate mono-cropping in any way, but encourages the isolation of a **small plot of land** on the Farm for major revenue generating crops, in order to ensure the economic viability of the operation. This contributes to

the greater goal of sustainability within the Farm by creating a steady funding source while at the same time allowing for the production of a wide range of crops with other, not necessarily profit oriented goals, such as research and extension. We recognize that economic viability is but one part of the Farms overall goals, and by ensuring that the economic component of sustainability at the Farm is not in jeopardy, our recommendation has the potential to increase the sustainability of the UBCFS as a whole since, after all, a system is only as strong as its weakest link.

## **FINAL REFLECTIONS**

Our group firmly believes that the UBC Farm has a great potential to enhance the sustainability of the entire UBCFS. Through the use of our indicators, their respective methods of data collection, and our recommendations to the UBCCSO, it is our hope that this paper can be constructively used in the future for the ongoing project of sustainability within the UBC food system. We believe we have taken the best elements of previous years and combined them to produce our model, which we hope will be put in use by next year's class. Being that our model and indicators are guided by the principles of weak anthropocentrism, we seek to increase social welfare on this campus, all the while upholding sound economic and ecological principles. As a group we place enormous value on the connections between components of sustainability and of the system, and it is hoped that our paper presents a clear indication of those values. Our model gives equal weight to each indicator of sustainability, which is, again, a fundamental tenet of our report – the idea that the system is only as strong as its weakest part.

The process that we undertook in creating our paper was exactly as it is laid out in this paper; determine our values, develop a model that is consistent with our values to assess both the entire UBCFS and the UBC Farm, identify our indicators and their respective instruments of data collection, examine the UBCFS and the UBC Farm, and come up with a list of recommendations to enhance the sustainability of the entire system. Our recommendations are targeted at creating a food system at UBC that is holistically sustainable, and are available on our website as well as in a preceding section. Our main recommendation for the UBCCSO and next years groups is to read this paper, adopt our model, briefly

modify it if necessary, and most importantly, act upon it. We feel as though through the creation of this document, we have developed a solid foundation on which to build, and through the combination of our paper and that of Group 9, the UBC Farm can begin in earnest the process of ameliorating its sustainability and, consequently, that of the greater UBCFS as a whole.

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**APPENDIX A**

**Indicators of Sustainability and their Methods of Measurement  
in the UBCFS and at the UBC Farm**

<b>Indicator of Sustainability</b>	<b>Method to Measure the Indicator of Sustainability in the UBCFS</b>	<b>Method to Measure the Indicator of Sustainability at the UBC Farm</b>
<b>Social</b>	Availability and acceptability of foods	Availability and acceptability of UBC Farm foods
<b>Economic</b>	Profitability of UBC and AMS Food Services	Profitability of the UBC Farm
<b>Ecological</b>	Proportion of food wastes that are being composted and recycled	Proportion of environmentally-friendly farming practices at the UBC Farm
<b>Social-Economic</b>	Affordability of foods	Affordability of UBC Farm foods
<b>Social-Ecological</b>	Awareness and knowledge of the UBCFS and the concept of sustainability	Awareness and knowledge of the UBC Farm and its role in contributing to the overall sustainability of the UBCFS
<b>Economic-Ecological</b>	Food mileage of foods used as ingredients or served by UBC and AMS Food Services	Proportion of UBC Farm foods that are sold to UBC and AMS Food Services as ingredients or to be served to customers directly

## APPENDIX B

### Methods to Measure Each Indicator of Sustainability in the UBCFS

#### 1. Method to measure the social sustainability of the UBCFS: availability and acceptability of foods.

<p><b>Sustainable</b></p>	<p>5</p>	<p>Highly available and acceptable. Food outlets are within a 3 minute walk from every building. At least two-thirds of the food outlets in the SUB are open 24 hours a day, 7 days a week. At least two-thirds of outlets that are not in the SUB are open for at least 12 hours a day (i.e. – 7 am to 7 pm), 7 days a week. All food outlets take all methods of payment (cash, debit, and credit). People perceive the food choices to be highly acceptable in terms of both variety (i.e. – vegetarian, organic) and cultural appropriateness.  <b>**80-100% of foods are available and acceptable**</b></p>
<p><b>Mildly sustainable</b></p>	<p>4</p>	<p>Somewhat available and accessible. Food outlets are a 5-10 minute walk from every building. Half of the food outlets in the SUB are open 24 hours a day, 7 days a week. Half of the outlets that are not in the SUB are open for at least 12 hours a day (i.e. – 7 am to 7 pm), 7 days a week. The other half is open at least 8 hours a day (i.e. – 7 am to 3 pm), 7 days a week. Two-thirds of all food outlets take all methods of payment (cash, debit, and credit). People perceive the food choices to be somewhat acceptable in terms of both variety (i.e. – vegetarian, organic) and cultural appropriateness.  <b>**60-80% of foods are available and acceptable**</b></p>
<p><b>Neutral</b></p>	<p>3</p>	<p>Fairly available and accessible. Food outlets are a 10-15 minute walk from every building. A third of the food outlets in the SUB are open 24 hours a day, 7 days a week. A third of the outlets that are not in the SUB are open for at least 12 hours a day (i.e. – 7 am to 7 pm), 7 days a week. The other two-thirds are open at least 8 hours a day (i.e. – 7 am to 3 pm), Monday to Friday. Half of all food outlets take all methods of payment (cash, debit, and credit). People perceive the food choices to be fairly acceptable in terms of both variety (i.e. – vegetarian, organic) and cultural appropriateness.  <b>**40-60% of foods are available and acceptable**</b></p>
<p><b>Mildly unsustainable</b></p>	<p>2</p>	<p>Somewhat unavailable and inaccessible. Food outlets are a 15-20 minute walk from every building. Only a fifth of the food outlets in the SUB are open 24 hours a day, 7 days a week. The other food outlets (either inside of outside the SUB are only open 8 hours a day (i.e. – 7 am to 3 pm), Monday to Friday. Only a third of all food outlets take all methods of payment (cash, debit, and credit). People perceive the food choices to be somewhat unacceptable in terms of both variety (i.e. – vegetarian, organic) and cultural appropriateness.  <b>**20-40% of foods are available and acceptable**</b></p>



<b>Unsustainable</b>	<b>1</b>	Highly unavailable and inaccessible. Food outlets are more than a 20 minute walk from every building. All food outlets (either inside or outside the SUB) are only open 8 hours a day (i.e. – 7 am to 3 pm), Monday to Friday. All food outlets take cash as a method of payment, but few (less than 10% take debit and/or credit). People perceive the food choices to be highly unacceptable in terms of both variety (i.e. – vegetarian, organic) and cultural appropriateness. <b>**0-20% of foods are available and acceptable**</b>
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**2. Method to measure the economic sustainability of the UBCFS: profitability of UBC and AMS Food Services.**

<b>Sustainable</b>	<b>5</b>	Each month, UBC and AMS Food Services make enough revenue to not only cover costs but to improve its food outlets as well (i.e. – better seating, brighter lighting, more staff) <b>**Revenue &gt;&gt; costs → high profit**</b>
<b>Mildly sustainable</b>	<b>4</b>	Each month, UBC and AMS Food Services make enough revenue to earn some profit. It is not, however, enough to be used to improve food outlets (i.e. – better seating, brighter lighting, more staff). <b>**Revenue &gt; costs → some profit**</b>
<b>Neutral</b>	<b>3</b>	Each month, UBC and AMS Food Services break even. <b>**Revenue = costs → zero profit**</b>
<b>Mildly unsustainable</b>	<b>2</b>	Most months (at least six), UBC and AMS Food Services break even. Other months (less than six), they do not. <b>**Revenue = costs (for at least six months of the year) → zero profit OR net loss**</b>
<b>Unsustainable</b>	<b>1</b>	Most months (at least six), UBC and AMS Food Services do not break even. Other months (less than six), they do. <b>**Revenue &gt; costs (for at least six months of the year) → net loss**</b>

**3. Method to measure the ecological sustainability of the UBCFS: proportion of food wastes that are being composted or recycled.**

<b>Sustainable</b>	<b>5</b>	Composting and recycling bins (either small or large scale depending on the size of the area) are readily available and easily accessible in every residential and food service area. Educational programs, brochures, and posters are readily available to ensure that people are composting and recycling appropriate foods in the correct way. <b>**80-100% of food waste is being composted or recycled**</b>
<b>Mildly Sustainable</b>	<b>4</b>	Appropriately sized composting and recycling bins (depending on the size of the area) are available and accessible (within walking distance) in a majority of residential and food service areas. Posters are seen near the bins to inform people of compostable and recyclable foods and the correct ways to compost and recycle them. <b>**60-80% of food waste is being composted or recycled**</b>
<b>Neutral</b>	<b>3</b>	Small-scale composting and recycling bins are seen somewhat throughout the campus. One or two large-scale bins exist. For those interested, educational programs on proper composting and recycling are available. <b>**40-60% of food waste is being composted or recycled**</b>
<b>Mildly Unsustainable</b>	<b>2</b>	Few small composting and recycling bins are available on campus. Most waste ends up in a landfill. There are hardly any educational programs on proper composting and recycling. <b>**20-40% of food waste is being composted or recycled**</b>
<b>Unsustainable</b>	<b>1</b>	No composting or recycling bins exist. All food waste is sent to a landfill. There are no educational programs on proper composting and recycling. However, there are some individuals who compost or recycle on their own (i.e. – have home gardens, take their pop bottles to off-campus recycling depots, etc). <b>**0-20% of food waste is being composted or recycled**</b>

**4. Method to measure the social-economic sustainability of the UBCFS: affordability of foods. Monthly costs of eating are taken from the Cost of Eating in BC report written by the Dietitians of Canada in October, 2003.**

<b>Sustainable</b>	<b>5</b>	Monthly student loans minus monthly costs (tuition, rent, and transportation) is over \$100 more than the monthly cost of eating (\$206.14 for a male age 19-24 years or \$151.41 for a female age 19-24 years). <b>**monthly costs of eating are being met, and over \$100 per month is saved**</b>
<b>Mildly Sustainable</b>	<b>4</b>	Monthly student loans minus monthly costs (tuition, rent, and transportation) is up to \$100 more than the monthly cost of eating (\$206.14 for a male age 19-24 years or \$151.41 for a female age 19-24 years). <b>**monthly costs of eating are being met, and up to \$100 per month is saved**</b>
<b>Neutral</b>	<b>3</b>	Monthly student loans minus costs (tuition, rent, and transportation) is exactly equal to the monthly cost of eating (\$206.14 for a male age 19-24 years or \$151.41 for a female age 19-24 years). <b>**monthly costs of eating are being met, but no money is leftover to save**</b>
<b>Mildly Unsustainable</b>	<b>2</b>	Monthly student loans minus monthly costs (tuition, rent, and transportation) is up to \$50 less than the monthly cost of eating (\$206.14 for a male age 19-24 years or \$151.41 for a female age 19-24 years). <b>**monthly costs of eating are not being met, and the student is up to \$50 short**</b>
<b>Unsustainable</b>	<b>1</b>	Monthly student loans minus monthly costs (tuition, rent, and transportation) is over \$50 less than to the monthly cost of eating (\$206.14 for a male age 19-24 years or \$151.41 for a female age 19-24 years). <b>**monthly costs of eating are not being met, and the student is over \$50 short**</b>

**5. Method to measure the social-ecological sustainability of the UBCFS: awareness and knowledge of the UBCFS and the concept of sustainability.**

<b>Sustainable</b>	<b>5</b>	High awareness and knowledge of the components of the UBCFS and of the concept of sustainability. More than two-thirds of people are aware of how to relate the sustainability concept to the UBCFS. <b>**80-100% of the UBC population have an awareness and accurate knowledge of the UBFS and sustainability**</b>
<b>Mildly Sustainable</b>	<b>4</b>	Some awareness and knowledge of the components of the UBCFS and of the concept of sustainability. More of than half of the people are aware of how to relate the sustainability concept to the UBCFS. <b>**60-80% of the UBC population have an awareness and accurate knowledge of the UBFS and sustainability**</b>
<b>Neutral</b>	<b>3</b>	Fair awareness and knowledge of the components of the UBCFS and of the concept of sustainability. Half of the people are aware of how to relate the sustainability concept to the UBCFS. <b>**40-60% of the UBC population have an awareness and accurate knowledge of the UBFS and sustainability**</b>
<b>Mildly Unsustainable</b>	<b>2</b>	Some lack of awareness and knowledge of the components of the UBCFS and of the concept of sustainability. Less than half of the people are aware of how to relate the sustainability concept to the UBCFS. <b>**20-40% of the UBC population have an awareness and accurate knowledge of the UBFS and sustainability**</b>
<b>Unsustainable</b>	<b>1</b>	Little awareness and knowledge of the components of the UBCFS and of the concept of sustainability. Less than one-third of people are aware of how to relate the sustainability concept to the UBCFS. <b>**0-20% of the UBC population have an awareness and accurate knowledge of the UBFS and sustainability**</b>

**6. Method to measure the economic-ecological sustainability of the UBCFS: food mileage of foods used as ingredients or served by UBC and AMS Food Services.**

<b>Sustainable</b>	<b>5</b>	<p>Almost all sources of foods used as ingredients or served by UBC and AMS Food Services that can be attained locally are bought from local suppliers. Suppliers are considered local when they are located within British Columbia.</p> <p><b>**80-100% of food that can be attained locally is bought from local suppliers**</b></p>
<b>Mildly Sustainable</b>	<b>4</b>	<p>Sources of foods used as ingredients or served by UBC and AMS Food Services that can be attained locally are bought from local or national suppliers. Suppliers are considered national when they are located within Canada.</p> <p><b>**60-80% of food that can be attained locally is bought from local suppliers**</b></p>
<b>Neutral</b>	<b>3</b>	<p>Sources of foods used as ingredients or served by UBC and AMS Food Services that can be attained locally are mostly bought from local, national, and continental suppliers. Continental suppliers are considered continental when they are located within North America.</p> <p><b>**40-60% of food that can be attained locally is bought from local suppliers**</b></p>
<b>Mildly Unsustainable</b>	<b>2</b>	<p>Sources of foods used as ingredients or served by UBC and AMS Food Services that can be attained locally are half bought from local, national, continental, and global suppliers. Global suppliers are anywhere around in the world.</p> <p><b>**20-40% of food that can be attained locally is bought from local suppliers**</b></p>
<b>Unsustainable</b>	<b>1</b>	<p>Sources of foods used as ingredients or served by UBC and AMS Food Services that can be attained locally are hardly bought from local suppliers. Almost all is bought from national, continental, or global suppliers.</p> <p><b>**0-20% of food that can be attained locally is bought from local suppliers**</b></p>

## APPENDIX C

### Methods to Measure Each Indicator of Sustainability at the UBC Farm

#### 1. Method to measure the social sustainability of the UBC Farm: availability and acceptability of UBC Farm foods.

<b>Sustainable</b>	<b>5</b>	Highly available and acceptable. UBC Farm foods are sold at almost all UBC food outlets. There are signs in those outlets that inform people of which foods are from the farm. The UBC Farm's market garden is open for at least 8 hours a day (i.e. – 9 am to 5 pm), 7 days a week. The garden takes all methods of payment (cash, debit, and credit). People perceive the food choices to be highly acceptable in terms of variety (i.e. – organic, at least 20 different types of food). <b>**80-100% of foods are available and acceptable**</b>
<b>Mildly sustainable</b>	<b>4</b>	Somewhat available and acceptable. UBC Farm foods are sold at three-quarters of UBC food outlets. There are signs in those outlets that inform people of which foods are from the farm. The UBC Farm's market garden is open for at least 8 hours a day (i.e. – 9 am to 5 pm), 5 days a week. The garden takes all methods of payment (cash, debit, and credit). People perceive the food choices to be highly acceptable in terms of variety (i.e. – $\frac{3}{4}$ organic, at least 15 different types of food). <b>**60-80% of foods are available and acceptable**</b>
<b>Neutral</b>	<b>3</b>	Fairly available and acceptable. UBC Farm foods are sold at only half of UBC food outlets. There are signs in those outlets that inform people of which foods are from the farm. The UBC Farm's market garden is open for at least 6 hours a day (i.e. – 10 am to 4 pm), 5 days a week. The garden takes only cash and debit as forms of payment. People perceive the food choices to be fairly acceptable in terms of variety (i.e. – $\frac{1}{2}$ organic, at least 10 different types of food). <b>**40-60% of foods are available and acceptable**</b>
<b>Mildly unsustainable</b>	<b>2</b>	Somewhat unavailable and inaccessible. UBC Farm foods are sold at only one-quarter of UBC food outlets. There are no signs in those outlets that inform people of which foods are from the farm. The UBC Farm's market garden is open for only 4-6 hours a day (i.e. – 10 am to 3 pm), only 3-4 times a week. The garden takes only cash as a method of payment. People perceive the food choices to be somewhat unacceptable in terms of variety (i.e. – $\frac{1}{4}$ organic, at least 5 different types of food). <b>**20-40% of foods are available and acceptable**</b>
<b>Unsustainable</b>	<b>1</b>	Highly unavailable and unacceptable. UBC Farm foods are sold at less than one-quarter of UBC food outlets. There are no signs in those outlets that inform people of which foods are from the farm. The UBC Farm's market garden is open for only 4 hours a day (i.e. – 10 am to 2 pm), only 3-4 times a week. The garden takes only cash as a method of payment. People perceive the food

		choices to be highly unacceptable in terms of variety (i.e. – less than ¼ organic, less than 5 different types of food). <b>**0-20% of foods are available and acceptable**</b>
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**2. Method to measure the economic sustainability of the UBC Farm: profitability of the UBC Farm.**

<b>Sustainable</b>	<b>5</b>	Each month, the UBC Farm makes enough revenue to not only cover costs but to improve itself as well (i.e. – new farming technologies, better equipment) <b>**Revenue &gt;&gt; costs → high profit**</b>
<b>Mildly sustainable</b>	<b>4</b>	Each month, the UBC Farm makes enough revenue to earn some profit. It is not, however, enough to be used to improve itself (i.e. – new farming technologies, better equipment). <b>**Revenue &gt; costs → some profit**</b>
<b>Neutral</b>	<b>3</b>	Each month, the UBC Farm breaks even. <b>**Revenue = costs → zero profit**</b>
<b>Mildly unsustainable</b>	<b>2</b>	Most months (at least six), the UBC Farm breaks even. Other months (less than six), it does not. <b>**Revenue = costs (for at least six months of the year) → zero profit OR net loss**</b>
<b>Unsustainable</b>	<b>1</b>	Most months (at least six), the UBC Farm does not break even. Other months (less than six), it does. <b>**Revenue &gt; costs (for at least six months of the year) → net loss**</b>

**3. Method to measure the ecological sustainability of the UBC Farm: proportion of environmentally-friendly farming practices.**

<b>Sustainable</b>	<b>5</b>	Almost all of the farming practices on the farm are either organic or ecologically-friendly. <b>**80-100% of the farming practices are environmentally-friendly**</b>
<b>Mildly Sustainable</b>	<b>4</b>	Most of the farming practices on the farm are either organic or ecologically-friendly. <b>**60-80% of the farming practices are environmentally-friendly**</b>
<b>Neutral</b>	<b>3</b>	Half of the farming practices on the farm are either organic or ecologically-friendly. <b>**40-60 of the farming practices are environmentally-friendly**</b>
<b>Mildly Unsustainable</b>	<b>2</b>	Most of the farming practices on the farm are neither organic nor ecologically-friendly. <b>**20-40% of the farming practices are environmentally-friendly**</b>
<b>Unsustainable</b>	<b>1</b>	Almost all of the farming practices on the farm are neither organic nor ecologically-friendly. <b>**0-20% of the farming practices are environmentally-friendly**</b>

**4. Method to measure the social-economic sustainability of the UBC Farm: affordability of UBC Farm foods.**

<b>Sustainable</b>	<b>5</b>	UBC Farm foods are 80% cheaper than the same foods sold in supermarkets. <b>**farm prices = 80% of supermarket prices**</b>
<b>Mildly Sustainable</b>	<b>4</b>	UBC Farm foods are 85% cheaper than the same foods sold in supermarkets. <b>**farm prices = 85% of supermarket prices**</b>
<b>Neutral</b>	<b>3</b>	UBC Farm foods are 90% cheaper than the same foods sold in supermarkets. <b>**farm prices = 90% of supermarket prices**</b>
<b>Mildly Unsustainable</b>	<b>2</b>	UBC Farm foods are 95% cheaper than the same foods sold in supermarkets. <b>**farm prices = 95% of supermarket prices**</b>
<b>Unsustainable</b>	<b>1</b>	UBC Farm foods are the same price as the same foods sold in supermarkets. <b>**farm prices = supermarket prices**</b>



**5. Method to measure the social-ecological sustainability of the UBC Farm: awareness and knowledge of the UBC Farm and its role in contributing to the overall sustainability of the UBCFS.**

<b>Sustainable</b>	<b>5</b>	High awareness and knowledge of the UBC Farm and of the concept of sustainability. More than two-thirds of people are aware of how the UBC Farm relates to the sustainability of the UBCFS. <b>**80-100% of the UBC population have an awareness and knowledge of the UBC Farm and its role in sustainability of the UBCFS**</b>
<b>Mildly Sustainable</b>	<b>4</b>	Some awareness and knowledge of the UBC Farm and of the concept of sustainability. More of than half of the people are aware of how the UBC Farm relates to the sustainability of the UBCFS. <b>**60-80% of the UBC population have an awareness and knowledge of the UBC Farm and its role in sustainability of the UBCFS **</b>
<b>Neutral</b>	<b>3</b>	Fair awareness and knowledge of the UBC Farm and of the concept of sustainability. <b>Half of the people</b> are aware of how the UBC Farm relates to the sustainability of the UBCFS. <b>**40-60% of the UBC population have an awareness and knowledge of the UBC Farm and its role in sustainability of the UBCFS **</b>
<b>Mildly Unsustainable</b>	<b>2</b>	Some lack of awareness and knowledge of the UBC Farm and of the concept of sustainability. Less than half of the people are aware of how the UBC Farm relates to the sustainability of the UBCFS. <b>**20-40% of the UBC population have an awareness and knowledge of the UBC Farm and its role in sustainability of the UBCFS **</b>
<b>Unsustainable</b>	<b>1</b>	Little awareness and knowledge of the UBC Farm and of the concept of sustainability. Less than one-third of people are aware of how the UBC Farm relates to the sustainability of the UBCFS. <b>**0-20% of the UBC population have an awareness and knowledge of the UBC Farm and its role in sustainability of the UBCFS **</b>

**6. Method to measure the economic-ecological sustainability of the UBC Farm: proportion of UBC Farm foods that are sold to UBC and AMS Food Services as ingredients or to be served to customers directly.**

<b>Sustainable</b>	<b>5</b>	Almost all of the UBC Farm foods are being sold to UBC and AMS Food Services as ingredients or to be served to customers directly. Any remaining foods are sold in the farm's market garden. <b>**80-100% of farm foods are being sold to food services**</b>
<b>Mildly Sustainable</b>	<b>4</b>	Most of the UBC Farm foods are being sold to UBC and AMS Food Services as ingredients or to be served to customers directly. The remaining farm foods are sold in the farm's market garden. <b>**60-80% of farm foods are being sold to food services**</b>
<b>Neutral</b>	<b>3</b>	Only half of the UBC Farm foods are being sold to UBC and AMS Food Services as ingredients or to be served to customers directly. The other remaining half of the farm foods are sold in the farm's market garden. <b>**40-60% of farm foods are being sold to food services**</b>
<b>Mildly Unsustainable</b>	<b>2</b>	Most of the UBC Farm foods are not being sold to UBC and AMS Food Services as ingredients or to be served to customers directly. Instead, most of the farm foods are sold in the farm's market garden. <b>**20-40% of farm foods are being sold to food services**</b>
<b>Unsustainable</b>	<b>1</b>	Very little UBC Farm foods are being sold to UBC and AMS Food Services as ingredients or to be served to customers directly. Most of the farm foods are sold in the farm's market garden. <b>**0-20% of farm foods are being sold to food services**</b>

## APPENDIX D

### Instruments of Data Collection

#### 1. Social Sustainability of the UBC Farm: Availability and Acceptability of UBC Farm Foods

- The social indicator of the UBC Farm is measured by the availability and acceptability of its foods.
  - The following questions can be answered by the AGSC 450, Class of 2005 students upon research of the UBC Farm and UBC food service outlets.
1. List all the UBC food service outlets that serve UBC Farm products.
  2. In those food outlets that serve UBC Farm products, are there any signs that inform people which foods are from UBC Farm?
  3. How many days of the week and how many hours of the day does UBC Farm's Market Garden open?
  4. How many methods of payment does UBC Farm's Market Garden accept?
  5. How many types of produce are sold in UBC Farm? What is the proportion of these products being organically grown?

Based on the data you collected, calculate the percentage of each category (e.g. for question 1 above, how many food outlets are serving UBC Farm products out of all the ones in UBC?) Take the lowest percentage calculated from each question and apply this number to the Method to measure the social sustainability of the UBC Farm: availability and acceptability of UBC Farm foods provided in Appendix C, to determine the social sustainability of the UBC Farm

#### 2. Economic Sustainability of the UBC Farm: Profitability of the UBC Farm

- The economic indicator of the UBC Farm is measured by the profitability of UBC Farm.
  - The following questions can be answered by the AGSC 450, Class of 2005 students upon research of the UBC Farm.
1. What was the exact accounting for cost of inputs and total sales at the UBC Farm last year?
  2. How much revenue was UBC Farm earning last year? Is UBC Farm making enough revenue to cover costs and improve the farm as well?
  3. Comparing to previous years in general, is UBC Farm earning more or less profits last year?
  4. Comparing to the year with highest profits, what percentage of those profits was the UBC Farm earning last year?

5. In comparison to other university farms, was the UBC Farm earning more or less profits last year?

Use the Method to measure the economic sustainability of the UBC Farm: profitability of UBC Farm provided in Appendix C to determine the economic sustainability of the UBC Farm.

### **3. Ecological Sustainability of the UBC Farm: Proportion of Food Wastes that are Being Composted or Recycled**

- The ecological indicator of the UBC Farm is measured by proportion of food wastes that are being composted or recycled
  - The following questions can be answered by the AGSC 450, Class of 2005 students upon research of the UBC Farm and UBC food service outlets.
1. How many recycling and composting bins available throughout the campus and where are they located.
  2. List all posters and programs that inform and educate people about recycling and composting of food wastes.
  3. If a sufficient number of recycling and composting bins is provided, how often do people use them?
  4. To calculate changes in percentage of recyclable and compostable food wastes, compare the amount of food and food packaging materials that are produced and used by UBC food service outlets with that of being composted and recycled each month.
  5. Calculate the amount of composted material that is being used in the UBC Farm for growing produces.

Use the Method to measure the ecological sustainability of the UBC Farm: profitability of UBC Farm provided in Appendix C to determine the ecological sustainability of the UBC Farm.

### **4. Social-Economic Sustainability of the UBC Farm: Affordability of UBC Farm Foods**

- The social-economic indicator of the UBC Farm is measured by the affordability of its foods.
  - The following questions can be answered by the AGSC 450, Class of 2005 students upon research of the UBC Farm and of local supermarkets.
1. List all of the different types of foods being sold at the UBC Farm.
  2. What are the prices of the above-mentioned foods being sold at the farm?
  3. What are the supermarket prices of the exact same foods?
  4. Are the farm prices greater than, equal to, or less than the supermarket prices?

5. If the farm prices are less than the supermarket prices, are they 95%, 90%, 85%, or 80% of the supermarket prices?

Use the Method to measure the social-economic sustainability of the UBC Farm: affordability of UBC Farm foods provided in Appendix C to determine the social-economic sustainability of the UBC Farm.

### **5. Social-Ecological Sustainability of the UBC Farm: Awareness and Knowledge of the UBC Farm and its Role in the UBC Food System**

- The social-ecological indicator of the UBC Farm is measured by the awareness and knowledge of the UBC Farm and its role in contributing to the overall sustainability of the UBCFS
  - The following questions can be answered by the AGSC 450, class of 2005 students upon research of the UBC Farm and UBC food service outlets
1. Are you aware that there is a Farm on the UBC campus?
  2. If so, do you have any general knowledge on what the Farm produces?
  3. Have you ever heard the term “sustainability”?
  4. If asked, would you be able to clearly define this term?
  5. According to your definition, do you think the current UBCFS is sustainable or unsustainable?
  6. Are you aware that some campus food outlets have purchased food from the Farm in the past, if so which ones?
  7. In your opinion, do you think that the UBC Farm can be further integrated into and improve the sustainability of the UBCFS?

Use the Method to measure the social-ecological sustainability of the UBC Farm: awareness and knowledge of the UBC Farm and its role in the UBCFS provided in Appendix C to determine the social-ecological sustainability of the UBC Farm.

### **6. Economic-Ecological Sustainability of the UBC Farm: Proportion of UBC Farm Foods Sold to UBC and AMS Food Services**

- The economic-ecological indicator is measured by assessing the proportion of UBC Farm foods that are sold to UBC and AMS Food Services as either ingredients or directly to the UBC community.
  - The following questions can be researched and answered by AGSC 450 students.
1. What proportion of the food produced by the UBC Farm is sold to UBC and AMS Food Services?

2. What percentage of the total amount of food purchased by UBC and AMS Food Services does the Farm supply?
3. Does the Farm have the productive capacity to supply UBC and AMS Food Services with all some or only a small proportion of their overall need?
4. Is there an opportunity to increase the amount of Farm food purchased by UBC and AMS Food Services?
5. What proportion of Farm food purchased by UBC and AMS Food services is sold directly to members of the UBC community?

Use the Method to measure the economic-ecological sustainability of the UBC Farm: profitability of UBC Farm provided in Appendix C to determine the economic-ecological sustainability of the UBC Farm

## **APPENDIX E**

### **SWOT Analysis of the UBC Farm Strengths, Weaknesses, Opportunities, Threats (SWOT) of the UBC Farm**

#### **Strengths**

- More land at disposal
- Have existing basic relationship w/UBC food providers
- Strong knowledge base to draw from, faculty “experts”
- Production efficiency increasing by the year → building momentum, not a grassroots project anymore
- Intrinsic understanding of production potential → Knowledge being passed on
- Low input costs other than labour

#### **Weaknesses**

- Moratorium on building structures that require a foundation and utilities
- Seasonality (1/2 year, roughly)
- High labour costs
- Staff turnover
- Employees knowledge spread too thin. (Ex. 2/3 production, 1/3 marketing, result → not all supply sold)
- Limited sources of capital (monetary, machinery, human)
- Most efficient use of land, some potential production areas not in use. (Ex. South and greenhouses)
- Need strong leadership and coordination in more efficient use of volunteers and students

#### **Opportunities**

- Secure donations in cash or equipment from Agri companies. ie tractors, etc. Goodwill or marketing strategy.
- Interfaculty involvement, students on farm for credit
- Create a paid position to organize students and volunteers – cost offset by increased efficiency
- Winter production – Greenhouses – high margin crops. Low cost of energy → competitive advantage over other growers, sell at discount? No effect on profit margin
- Take advantage of competitive advantages
  - Low distribution costs
  - Low input costs – fertilizers, etc.
  - Low energy costs
  - Low labour costs (volunteers)
- Cater directly to students – no other producer – monopoly, especially at Fairview residence. No grocer on campus.
- Secure contracts with on campus food providers

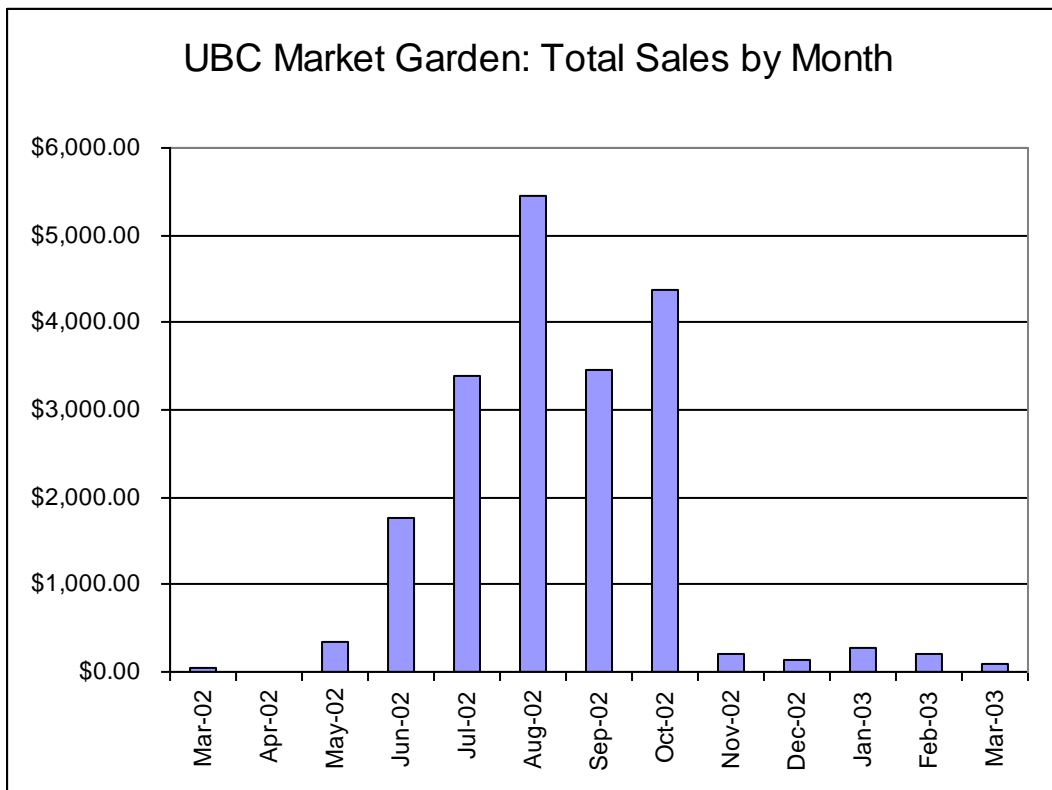
## Threats

- Temporal coordination of supply and demand (seasonality)
- Poor pitch to stakeholders on farm value and potential
- Not acting/expanding on recommendations of current AGSC 450 projects and resources
- UBC development plan/strategy. (Condos?)
- Poor crop management, inventory is an important asset. Low yields → low revenue

## APPENDIX F

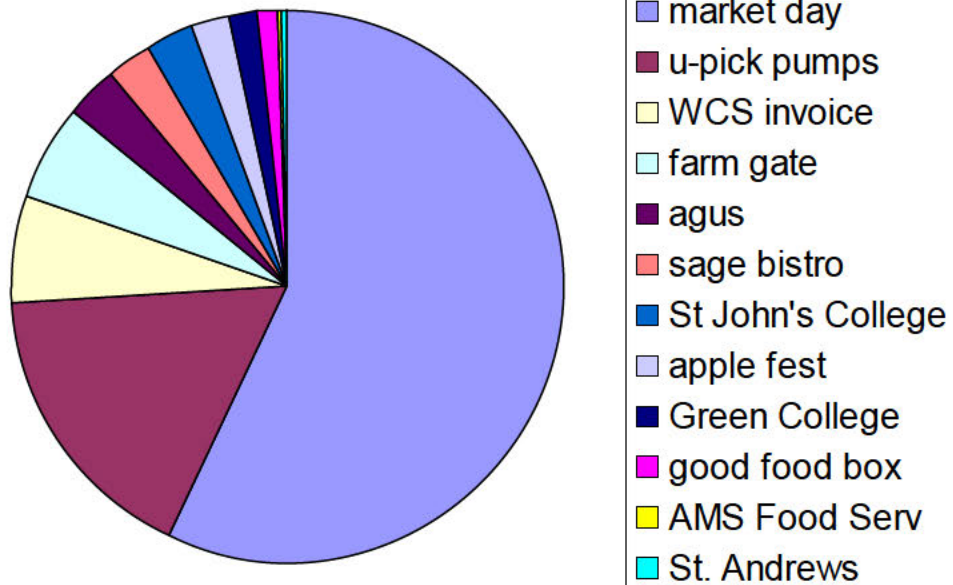
### Documents Pertaining to the UBC Farm (Source: Mark Bomford)

#### UBC Market Garden 2002-2003 Sales

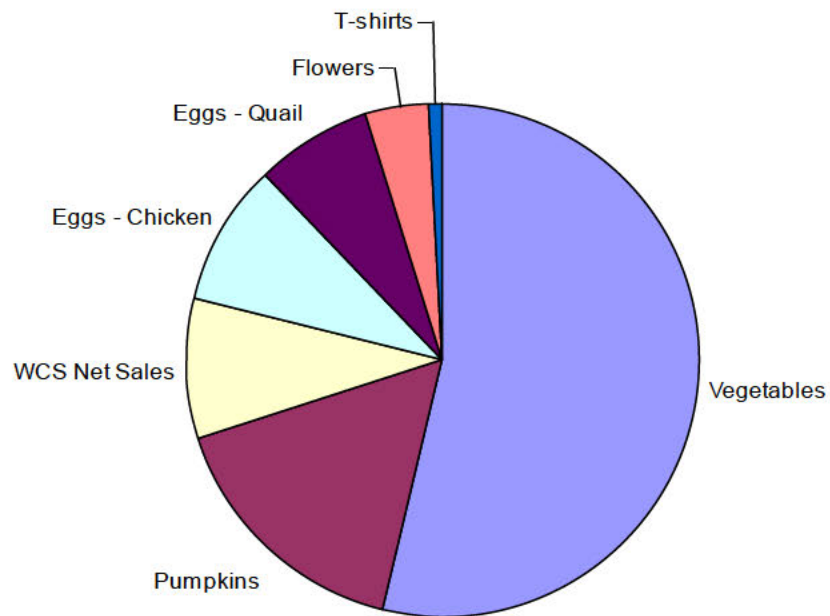




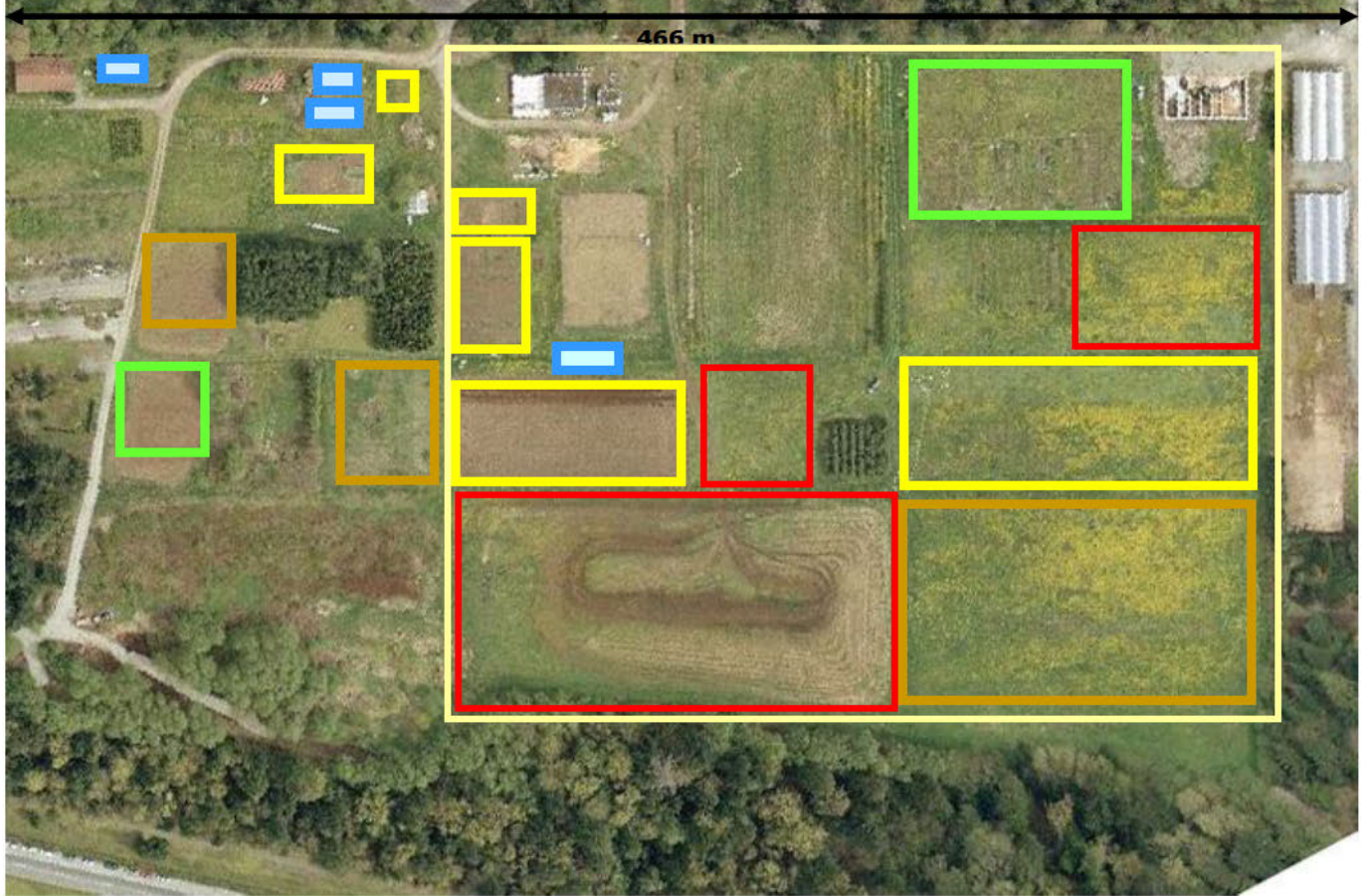
## UBC Market Garden Sales by Type









## UBC Market Garden Sales by Item



# UBC Farm 2003 Market Garden



-  **Field Production**
-  **Fallow / Pasture Poultry**
-  **Maya / Musqueam Gardens**
-  **Greenhouse Production**
-  **Production Potential**
-  **Most Productive Land**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]