UBC Social, Ecological Economic Development Studies (SEEDS) Student Reports

The LFS Cropedia – Creating an UBC Urban Agriculture Educational Resource

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Abstract

When considering food security at UBC, ways in which to address and increase food security include education and increased awareness of current issues, goals, and community efforts to address environmental sustainability. In Scenario 6 of the UBC Food Security Project, a web-based educational resource known as a "Cropedia" was developed in order to increase accessibility and availability of reliable crop information to the general public, so as to work towards encouraging growth and purchase of local and organic produce, which then contributes towards decreasing greenhouse gas emissions and other environmentally destructive activities.

11 of a total of 44 crops were researched by members of Group 18 —including apple, blueberry, filet bean parsley, raspberry, savoury, snow peas, sugar snap peas, thyme, tomatillos, and zucchini—and web pages developed for each crop. Crop information included on the web pages consisted of the crop's common name, scientific name, seasonality, growing conditions, nutritional information, recipes, storage methods, and additional uses. Further recommendations for the project are to do with maintenance of the many web pages for validity and accessibility of information, further research of reliable information and enhancement of a user-friendly web page interface, as well as the expansion of Cropedia information and reach to regional and global scales. The Cropedia could possibly contribute towards increasing public accessibility to and availability of information, which could lead to further changes in education and knowledge towards increased food security.

Introduction

Today, the issue of the environment, its implications for the future and how to address the prospect, is commonly known and spoken of worldwide. Topics include increase in greenhouse gas emissions, climate change, species extinctions, loss of biodiversity, as well as loss and degradation of habitat. Such changes in the environment also affect agriculture and food security throughout the world. In North America, there is also the widespread mechanization of agricultural processes, and a growing distance from the knowledge of how food is grown and prepared. Fewer people are part of the farm industry, while a vast majority of the population is found in urban areas and has lost its connection with the earth that grows and provides its source of food. In the pursuit of modern-day industrialization and consumerism, while aiming for greater amounts of produce attained at maximized efficiency, we have unknowingly added to the detriment of habitat degradation and greenhouse gas emissions by use of mechanization, fossil fuels, and chemical fertilizers in agriculture. Transportation of imported goods also adds to the use of fossil fuels, which contributes to the increase of greenhouse gas emissions and further environment damage.

Ways to address the issue of greenhouse gases, population health and subsequent consequences include urban farming, consuming local produce to decrease fossil fuels used in transportation of imported goods, and the use of local, organic agricultural practices—which decreases the use of big factory farms, and chemical fertilizers. A problem that surfaces is that a vast majority of the population has limited knowledge toward how to begin proceeding toward a more environmentally sustainable and food-secure lifestyle. Whether it is lack of know-how or lack of belief in the effectiveness of the change, such things can work to discourage the initiation of change so necessary for the environment, the future of humanity and the planet.

One way of addressing this issue is through education, making information available and accessible to the wider public. Dramatic changes are difficult to bring about, but one could at least begin by taking baby steps toward change, beginning in the local neighbourhood with the University of British Columbia (UBC) farm and the Land and Food Systems Orchard Garden (LFSOG), before moving to a regional and hopefully global scale. The UBC farm and the LFSOG are locations on university grounds set aside for small-scale organic agricultural pursuits, which can contribute toward a more sustainable food system at UBC. Produce from the farm and garden is also available to local Vancouver residents, so can potentially contribute towards increasing food security in the city of Vancouver.

One aspect of UBC's Food Security Project will work toward making an educational tool and resource that is public, but readily accessible and available with credible information. The online encyclopaedia Wikipedia is widely known and consulted, with available resources to create, edit and further enhance web pages. The projects of four different groups of students, one of which is Group 18, will consist of using the Wikipedia template to make web pages for individual crops grown at the UBC Farm and LFS Orchard Garden. Using user-friendly language and settings, these web pages will include, but are not limited to, information about the crop's growing conditions, nutritional content, recipe ideas, and storage methods. Generating this UBC Urban Agriculture Educational Resource, collectively known as a "Cropedia", will be one way through which UBC's Food Security Project may raise public awareness about the benefits of urban farming and gardening. Equipping the general public with knowledge about local produce may change one's lifestyle by encouraging them to choose more locally produced food, which may then contribute toward environmental sustainability. Making an online "Cropedia" may possibly work toward increasing public accessibility to and availability of

information about local food, which may then lead to further changes in education and knowledge towards increased food security. This Cropedia can also serve to further raise awareness of the UBC farm and the LFSOG to the greater public, as well as the produce available there.

Vision

In undertaking this project, group members of Group 18 agree with and seek to uphold the vision statement, consisting of seven points, for a sustainable UBC food system (refer to Appendix A). Developing the Cropedia particularly emphasizes points four and five, that "Providers and educators promote awareness among consumers about cultivation, processing, ingredients and nutrition" and "Food brings people together and enhances community". An educational tool and resource can contribute toward sharing information and knowledge, bridging producers and consumers. Another use for the Cropedia is as a marketing tool for the UBC farm, which could work toward increasing local economic sustainability of the farm in distributing its produce.

However, although the group members of Group 18 generally agree with points brought forth in the vision statement, group discussion also brought forth seemingly conflicting issues within the seven points of the vision statement that need to be considered. There are a number of crops that may not be grown in certain climates or environments. While locally grown food will diminish use of fossil fuels in transportation of imported goods, food choice becomes limited by the growing season and soil type of the locality. Furthermore, this would limit the ethnic diversity in food upheld in point three of the vision statement. Another issue that is raised is the available nutrition of the foods grown; it is commonly agreed by nutritionists that the best diet

upholds the principles of variability and moderation in food. Food variability would be diminished, since the climate in Greater Vancouver would be unsuitable for many fruits, limiting its inhabitants to berries and apples, which also may not be available year-round. When discussing the various points of the vision statement, it should be noted that for various localities, unique issues and specified knowledge must be taken into consideration and then applied as would optimally fit the locality and its inhabitants.

Nevertheless, as stated above: while dramatic changes are difficult to bring about, one could still initiate with baby steps toward change, beginning in the local neighbourhood with the UBC farm and the LFSOG. Although this project may be limited in some aspects toward fulfilling vision statement, it is believed that the Cropedia can still play a role in facilitating communication between producers and consumers, raising public concern toward food security, and so contribute towards increased food security.

Methods

Division of Workload

This year, four groups of students in the course named "Land, Food and Community III" (LFS 450) worked with the UBC Farm and LFSOG to create an UBC Urban Agriculture Educational Resource, named Cropedia, which provides information about the crops grown at the UBC Farm and the LFSOG. Each group consists of five to seven group members, and the four groups working on the Cropedia project are collectively referred to as Scenario Group 6. Members worked within and between the groups to share the responsibilities of building an easily accessible online resource that is user-friendly and open to the general public.

At the start of the project, seed logs from both the UBC farm and the LFSOG were given to Scenario Group 6, listing the varieties of produce that can potentially be grown in the farm and the garden. Groups were faced with the challenge of deciding which crop to work on, and then wondering if the seeds listed were actually planted. The stakeholders, LFSOG and UBC Farm representatives, and the LFS 450 teaching team narrowed down the list to 44 different crops, and the crops were divided amongst the four groups of students working on the Cropedia project.

Group 18 was in charge of developing Cropedia pages for apple, blueberry, filet bean parsley, raspberry, savoury, snow peas, sugar snap peas, thyme, tomatillos, and zucchini. The five group members of Group 18 divided into two sub-groups: three researchers, and two web-technicians—that also functioned as group representatives and communicators. The main task of the research team was to research specific information about the assigned crops. The technicians organized information, designed and updated the Cropedia pages, and communicated with the stakeholders as well as other Cropedia groups. Group members chose their task on the basis of interest and individual strengths. Individuals who were not familiar with computer tools did research, and individuals who were familiar with computer usage and enjoyed interaction with people chose to be technicians. Over the course of the project, group members would meet together to make a work plan, assign individual duties, and updated each other by e-mail, meeting, or phone calls.

Research and Information

Due to the nature of this project, the majority of research was performed using World Wide Web (WWW). A generalized search performed on the widely used web-based search engine, Google, gave researchers a perspective into the information available to the general

public. To locate scholarly sources, the search engine Google Scholar was used to focus research topics. Keywords used in the search consisted of the common names of the 11 crops assigned to Group 18. Reliable sources found via the Internet included the online book database CRCnetbase accessible to UBC students, government-affiliated, and registered organization/association websites. If only limited information was available, company websites, and to a lesser extent, small scale websites that obtained information from reliable references, were considered. The researchers focused on specific questions about each individual crop during the research (refer to Appendix B).

The online book database, CRCnetbase—government-affiliated and university-affiliated—was the key information source, providing vital information regarding many of the eleven assigned crops. Several published books were found via CRCnetbase, which included *Processing Fruits* by Root, W.H. & Barrett, D.M., *Phytochemicals in Nutrition and Health* by Camire, M.E., *An Encyclopedia of Small Fruit* by Gough, B., and *Handbook of Herbs and Spices* by a collection of authors. Government-affiliated websites used in research included the Nova Scotia Fruit Growers' Association for apple, BC Blueberry Council for blueberry, Raspberry Industry Development Council for raspberry, and the USA-affiliated Fruits and Veggies Matter website. Nutritional values and percent daily values were calculated based on the Canadian Nutrient File (CNF), provided by Health Canada, and Canadian Food Inspection Agency websites. University-affiliated websites used for research included a vegetable growing guide from Cornell University and a garden guide from the University of Illinois for both snow peas and sugar snap peas. Registered organization/association websites and company websites that were used as information sources included an American-based CBS interactive website called CHOW for thyme, a vegetable magazine type website called Vegetable Gardener for filet beans,

Dave's Garden for zucchini, and West Coast Seeds for a number of the 11 crops. Lastly, small published websites, such as those with articles written by cooks, or cookbook related web pages, were used mainly for recipes. Aside from information used from the books found in CRCnetbase, all research was gathered from reliable websites created to be accessed by the general public.

Primary goals in research included deriving information from scholarly websites, published materials, and reliable websites as main sources of the information now available on the Cropedia pages. The purpose of using these information sources was to establish a trustworthy, reliable, research-based website made available to the general public so one could learn more about the crops grown locally at the UBC farm and LFSOG. A number of different sources were required to compile all the information available on each Cropedia page. The overall aim of this project was to provide the public with one complete and coherent guide that includes information on crop growing conditions, seasonality, nutrition and other properties of the 44 different crops on a single web server. As a result, the time, effort and difficulty for the general public to access all necessary information can be minimized. While the general public usually has limited access to scholarly sources, this research-based website may help to increase the availability and accessibility of reliable information.

For each crop, a photo of the crop was presented. Since most crops were not in season, distinctive pictures of the crops were difficult to obtain should photos be taken at the UBC Farm and LFSOG. The pictures now used on the Cropedia pages were found on the webpate http://www.compfight.com, a search tool for Flickr®. Flickr® is an online image organizer and sharing application that allows users to upload, view, and share their photos (Flickr, 2010). The web page http://www.compfight.com provides a search engine for pictures uploaded onto the

Flickr® database. Searching with key words will result in a list of images that match the key word description. To avoid using un-authorized images, images of the crops were searched for using the mode "Creative Commons Only", wherein image uploaders agree to copy, distribute, and reuse their pictures (Creative Commons, 2010).

Besides the images photos, nutrition fact tables were generated as image files based on nutrient values provided by Health Canada (HC), and the Recommended Daily Values set by the Canadian Food Inspection Agency (CFIA). The information displayed is also accessible via HC and CFIA websites. Numerical data was organized into a short version of the standard nutrition fact tables that the general public is familiar with. These nutrition fact tables are easier to read compared to verbal descriptions, and at the same time, bring dynamic to the web pages, which are full of text. Certain particular details about nutrition facts have also been included in the pages of individual crops.

Information specific to the UBC Farm and the LFSOG—such as the number of years that the crops grown on the farm, and the variety of certain crops—were obtained from meeting with the stakeholders from both farm and garden, and via e-mail contact with the same stakeholders. All of the crops researched by Group 18 were grown at the UBC Farm, but not at the LFSOG, therefore information was obtained from Ms. Amy Frye, the UBC Farm Marketing Coordinator, and her colleagues at the UBC Farm through meeting and e-mails.

Presentation of Information

The Cropedia pages present crop-specific information including pictures, common and scientific names, usage, years grown at UBC Farm/LFSOG, growing conditions, seasonality, nutritional information, additional health benefits, recipes, storage/selection/preparation

methods, and academic associations, if any. Depending on the availability of information regarding each crop, the amount of information on each Cropedia page may differ slightly between web pages.

A paper, detailing the project's progress, was written and compiled by group members, and a presentation was made to other students and teaching staff of LFS 450.

Findings

Apple

Apples are a fruit that is widely grown around the world, though production is concentrated in the Northern Hemisphere (Nova Scotia Fruit Growers' Association, 2004). The perfect growing conditions for apples are a combination of warm days and cool nights (Nova Scotia Fruit Growers' Association, 2004). Due to the wide range of apple varieties, apples are available all year round (Nova Scotia Fruit Growers' Association, 2004), though the peak season of apple growing is from August to October (Seasonal Recipes, 2002). Apples are best stored at a low temperature and high humidity (0-4^{o}C and 90% relative humidity) to prevent respiration, moisture loss, and micro-organism growth (Nova Scotia Fruit Growers' Association, 2004). Apples are rich in carbohydrate and dietary fibre, and also a good source of potassium, phosphorus, calcium, and ascorbic acid. For a detailed description of this crop, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Apples.

Blueberry

Blueberries are native to North America. There are two types of blueberries that are commonly grown—lowbush and highbush varieties. British Columbia is the largest producer of

highbush blueberries in Canada (BC Blueberry Council, 2009). Blueberry seasonality ranges from late spring to late summer, though peak season is during July and August. Although it has a relatively short season, blueberries are a long-term crop, because they can only reach full production after at least eight years of growth, though they can be harvested after three to four years of planting (Ontario Ministry of Agriculture, 2008). Growing blueberries is best under a full sunlit area with acidic, well drained, and loose soil that contains high organic matter (Ontario Ministry of Agriculture, 2008). Blueberries are known for antioxidant activity, a good source of vitamin A and C, and are also beneficial to eyesight and memory (BC Blueberry Council, 2009). For a detailed description of this crop, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Blueberry.

Filet Bean

Filet beans, as known as French beans, are a thin, straight and tender bean with dark green pods and purple stripes (Burpee, 2010). This crop is relatively easy to grow, and gives a very high yield if grown under moderate conditions, which includes enough sunlight exposure, cold wind protection, and rich, moist but not soggy soils (Burpee, 2010). The crop can be harvested in the summer (Bateman, 2001). For a detailed description of this crop, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Filet_bean.

Parsley

Parsley is an annual culinary herb that originated in the Eastern Mediterranean region (Grieve, 1931a). Two types, including the curly-leaf and flat-leaf, are widely grown on rich and moist soil with enough sunlight (Charles, 2004). The seed may be sown in many different ways

and pre-treatment soaking for germination is highly recommended (Grieve, 1931a). The recommended growing conditions for the highest yield, when to seed and harvest for continuous supply, nutritional information from Health Canada, easy recipes, and other uses of parsley, with proper storage techniques, are available at the link: http://cropedia.landfood.ubc.ca/wiki/Parsley.

Raspberry

Red and black raspberries are the two kinds of raspberry currently available. Red raspberries are grown in British Columbia (BC Raspberry Council, 2009), and growth is best in areas with cool summers, moderate winters, rich soil, plenty of rain, and sunny summers. Fresh raspberries are only available from July till mid-August (BC Raspberry Council, 2009). Due to its fragility, raspberries need to be stored frozen for transport and year round. As a result, only 3% of raspberries are sold fresh and 97% of the crop is used for processed products (Deuel and Plotto, 2005). Raspberry is known as an antioxidant-rich and antimicrobial fruit, and is a good source of manganese, vitamin B and D (BC Raspberry Council, 2009). For a detailed description of this crop, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Raspberry.

Savoury

There are two types of savoury: summer and winter savoury (West Coast Seeds, 2010a). Ordinary growing conditions with sunshine and warmth are required to grow savoury, but the crop is relatively easy to grow. Summer savoury is available year-round while winter savoury is a perennial crop (West Coast Seeds, 2010a). This crop is mainly used for culinary purposes and also used in certain medications in the early 1900's (Grieve, 1931b). Nutritional information for

savoury, a recipe using winter savoury, and years grown at the UBC farm are also available at the link: http://cropedia.landfood.ubc.ca/wiki/Savory.

Snow Pea and Sugar Snap Pea

Both snow peas and sugar snap peas contain sugary seeds, have edible pods and lack a stiff paper-like lining, thus are classified within the edible pod peas cultivar group (Tsao and Lo, 2003). The difference between the two peas lies in their appearance. Snow peas have a flat appearance, while sugar snap peas have a slightly thicker pod wall and a round, pump appearance (Tsao and Lo, 2003). Growing conditions of both pea types are similar: well-drained soil that is high in organic matter and with full sun exposure (Cornell University, 2006). Snow peas are usually harvested and used prior to reaching full maturity, so they need to be harvested more frequently than sugar snap peas (University of Illinois Extension, 2010). Both peas grow best in cool and damp weather (West Coast Seeds, 2010c; West Coast Seeds, 2010d). Furthermore, both types can be consumed raw or cooked (Fruits & Veggies Matter, 2010a). For a detailed description and additional information of snow peas, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Snow_Peas. For a detailed description and additional information of sugar snap peas, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Sugar_Snap_Peas.

Thyme

Thyme, or *Thymus vulgaris L.*, is an herb that originated in southern Europe (CBS Interactive Inc., 2010). Thyme grows best in soil with soil pH of less than 5.5 and temperatures of 7-20^{o}C (Stahl-Biskup and Venskutonisa, 2004). Thyme is usually available in summer, but it

can also be available all year if processed (CBS Interactive Inc., 2010). This herb is known for possessing antioxidant and antimicrobial properties (Stahl-Biskup and Venskutonisa, 2004). The most common usages of thyme are as a flavoring agent, a culinary herb, and in herbal medicine (Stahl-Biskup and Venskutonisa, 2004). Thyme is usually stored dried since its shelf life is short (CBS Interactive Inc., 2010). For a detailed description of this crop, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Thyme.

Tomatillo

Tomatillos, a relative of the tomato, have a tart flavor (Fruits & Veggies Matter, 2010b), which makes it a popular ingredient to use in flavour enhancement and to stimulate appetite in Mexican and Guatemalan dishes (Hernandez Bermejo and Leon, 1994). Although ripeness and sweetness are indicated by its yellow color (Fruits & Veggies Matter, 2010b), tomatillos are usually harvested and used for salsa verde when it is still green (West Coast Seeds, 2010b). Growing conditions of tomatillos are similar to those of tomatoes, requiring fertilized soil, full sunlight and regular watering. However, tomatillos are far easier to grow comparatively (West Coast Seeds, 2010b). The best growing season is during the warmer seasons, including mid-late spring and early-mid summer (West Coast Seeds, 2010b). The fruits ripen unevenly, so harvest may last up to 2 months (Gough, 2008). For a detailed description and additional information of this crop, please visit the link: http://cropedia.landfood.ubc.ca/wiki/Tomatillos.

Zucchini

Zucchini originated from North America and was cultivated in Italy for the first time in the 1920's (Fruitsandveggieguru, 2010). At the UBC farm, mixed varieties of green, yellow, and

romanesco zucchinis are grown. This monoecious crop, which produces male and female flowers on the same plant, grows well in warm conditions (Harvest of the Month, 2007). Zucchini is a good source of vitamin C and several other micro-nutrients (Harvest of the Month, 2007). Additional information is available at the link: http://cropedia.landfood.ubc.ca/wiki/Zucchini.

Discussion

Credibility and Validity of Research Sources

To generate an educational resource, liability of information is critical. The majority of information gathered was from publications available on CRCnetbase database or government-affiliated websites. The CRCnetbase database contains over 6000 published books online that span over numerous disciplines. The database offers access to premier scientific and technical references available in the world and has been adopted at recognized academic and corporate institutions around the world (CRCnetbase, 2010). This gives credibility to the information obtained from the database. Other resources, such as government-affiliated, university-affiliated, and organization/association websites are also considered reliable sources, since the information contained is research-based and makes reference to reliable sources published by recognized organizations, or produced in association with a government or university. In addition, in regards to the information presented to the public, these resources are subject to regulation. One example is the Health Canada web page, which is under the authority of the Food and Drugs Act and Regulations, and the Department of Health Act (Health Canada, 2005).

General public non-government organization websites with a slightly lower validity rating were also used when necessary. Examples of these public websites include

VegetableGardener.com, Gardenaction.co.uk, Health-Garden.com, and Fruitandveggieguru.com. Extra precaution was taken when using information provided by the websites. Investigations were made on the list of references used, and common information was cross-referenced to information available on reliable sources.

A general public website that was encountered during research was found to be an electronic version of a published book, *A Modern Herbal* by Maud Grieve, published in 1931, thus deeming the site to be a reliable source. Although concerns about up-to-date information were raised, some facts remain the same over time, so the website was considered as a source for some of the 11 crops. Lastly, recipes were drawn from popular recipe sites or organizations. Since this is an area that requires less concern over credibility, so long as the recipe looked delicious and appropriate, it was considered suitable for the Cropedia.

Accessibility of Research Sources

Generally, the resources used in this project were highly accessible to the general public, with the exception of the CRCnetbase online database. Although CRCnetbase is a worldwide database used at numerous academic and corporate institutions around the world, the books contained within the database are only accessible to those from the institutions, or individuals who have paid for subscription to the database (CRCnetBASE, 2010). Therefore, people who do not purchase the subscription or do not study at institutions with a subscription do not have access to the information contained within the database. As a result, the accessibility of this database is considered low. On the contrary, resources such as Nova Scotia Fruit Growers Association, Network of A Healthy California, and Cornell University, are

government/association associated websites and considered highly accessible to the general public.

Some reliable information sources are considered highly accessible because only a keyword regarding the crop of interest, such as “BC blueberry” or “BC raspberry”, is required on popular search engines like Google and Yahoo. A list of links to websites that contain information on the crop of interest would be generated from these search engines. In addition, other web sources that were also used included company websites or general websites with an educational purpose toward gardening. These sites were also highly accessible. Similarly, websites like Seasonal Recipes and CHOW are also highly accessible to the general public. The only limitation to these highly accessible resources is access to the Internet. The Internet is needed to use search engines in order to locate the specific sources used in this research project. Overall, most of the information has become quite accessible via the Internet, with the exception of academic sources and scholarly information, which are limited to those with a subscription.

Difficulties

Little difficulty was encountered when researching for information on the assigned crops, with an exception to filet beans and savoury. The popularity of the crops seems to be the determination factor in the availability of accessible information. As a result, finding reliable sources for apple, blueberry, raspberry, thyme, parsley, zucchini, tomatillos, snow peas and sugar snap peas were relatively easy. For a majority of the crops, a common name was the only keyword used on the search engines. For other crops, some resources only used the crop’s botanical name or other common names of the crops, and therefore a variety of searches using different key words relating to the same crop had to be used in order to obtain all information for

a completed Cropedia page. For a few crops, a search through the list of references of non-certified web pages, or web pages with uncertain reliability, was needed to obtain solid reliable information from reliable references.

Filet beans and savoury have little accessible and reliable information available on the Internet. Updated information about filet beans comes mostly from easily accessible non-certified websites. This may be due to an abundant variety of similar types of bean plants. With other similar bean plants, a specific search for suitable and reliable information for filet beans was rather difficult, so several websites with a relatively low validity were also used as sources. Savoury was another crop that had encountered similar research problems, though the problem may have been due to the popularity of the herb spice and the variety of definitions to the word "savoury". Generalized searches on search engines with several different keywords generated web pages containing the different definitions of the word "savoury". After completing research for other crops, Group 18 worked together to generate a small collection of reliable websites, and a search for savoury-related information was performed on each website. Information on savoury was also found on other general websites that had been referenced to for other crops.

Linking Back to the Sustainable UBC Food System Vision Statement

The information provided on the Cropedia pages were condensed and worded in a relatively user-friendly manner, in hopes of generating interest toward the crops and their local agriculture. The Cropedia was originally initiated to provide a database for the UBC Farm/LFSOG, Sprouts, AGORA Café, and AgUS regarding local produce at UBC. The functions of the Cropedia can reach beyond this, so that it becomes an educational resource for the general public in Greater Vancouver. The Cropedia contains information about why certain

crops can be grown in Vancouver, nutritional values, and advice on how to process, store, and grow the food. By reading the Cropedia, people may very well recognize that varieties of food grown by local neighbours are readily available, fresh, nutritious, and delicious. People may then begin to feel the relationship and bond between them and the food producers, become willing to purchase at local farms, or physically support the farmers at harvest season and generate a healthy interaction within the community. This may also generate interest in agriculture, increase local food production, enhance food security and contribute toward maintaining a sustainable food system.

Recommendations

Because this is the first year that students in the Land and Food System series (formerly known as the Agricultural Sciences series) worked to develop this web-based educational resource, many potential possibilities for the Cropedia are still to be discovered. Some recommendations—for future LFS 450 students who will continue this project, the UBC Farm, the LFS Orchard Garden, Agora Café, Sprouts stakeholders, and any other enthusiastic individuals who recognize Cropedia's important role in connecting producers and consumers—are listed below:

1. Involve Land and Food Systems faculty staff or volunteers from the UBC Farm and LFSOG in maintaining the Cropedia pages. Farm staff and volunteers have instant and most updated information on their crops, such as images and current year production. General information that does not require periodic updates, such as nutritional information, growing conditions, and storage methods, can be overseen by LFS 450 student groups. Since the LFS 450 course is only held during the second half of an

academic year, when most crops are not in season, it would be difficult for LFS 450 students to visualize what it is like during harvest season.

2. The Cropedia is currently based on crops grown at UBC Farm and LFSOG. There is possibility of incorporating other local produce sold at UBC food outlets, bridging the UBC community to general public. Any non-government organization community gardens, kitchen gardens, or certified local organic farms in the Greater Vancouver area can also be potential community partners.
3. Address the issue of advertising the Cropedia. Food outlets at UBC that obtain produce from the UBC Farm or LFSOG may advertise that their food is locally grown at UBC, and that information about the crops can be viewed online. Posters, web-links, or bumper stickers containing the Cropedia logo and web link can be distributed.
4. Should the project be continued by faculty staff and students, the list of crops on the Cropedia can be further organized by categorizing the crops. This can give the website a cleaner look and make it easier to read. This is especially important when more crops are added onto the Cropeda, as the list will become long and difficult to navigate if left unorganized.
5. Should the project be continued by faculty staff and students, more general nutritional information may be added to some of the web pages, as well as recommendations for dietary and health conditions. Although some web pages already have this kind of information, many other web pages do not specify any physiological benefits.
6. Authorization and account accessibility should be regulated by faculty staff and stakeholders, since at present, anyone can register for an account, and are make changes to the web pages. Information should be regulated and approved to maintain information

integrity. A suggestion is to set a few common accounts, then distribute the usernames and passwords to students who participate. Accounts can then be recycled and passwords changed for the following group of students that participate in this project.

Conclusion

Amidst the many environmental issues going on in the world today, small steps can and should be taken to make changes toward more environmentally sustainable practices. The first of these steps may include education and increased awareness about food security, and what can be done to increase food security. By working together with three other student groups, as well as stakeholders from the UBC farm and the LFS Orchard Garden, a Wikipedia-based Cropedia has been developed with web pages for 44 crops that are grown in the UBC farm and the LFS Orchard garden. Information on each crop includes the crop's common name, scientific name, seasonality, growing conditions, nutritional information, recipes, storage methods, and additional uses. Making a Cropedia could possibly contribute towards increasing public accessibility to and availability of information, which could lead to further changes in education and knowledge towards increased food security. It is important that the information presented is taken from reliable sources, compiled and organized into one resource, and maintained for ease of access and validity of information. While the Cropedia is yet limited to the farm and garden on the UBC campus, it is possible that in upcoming years, such an educational web-based resource can be expanded to include the region of Greater Vancouver, British Columbia, with further aims toward increasing worldwide food security.

Appendix A

Vision Statement for a Sustainable UBC Food System: Plain Language Version

The overarching goal of a sustainable food system is to protect and enhance the diversity and quality of the ecosystem and to improve social equity, whereby:

1. Food is locally grown, produced and processed.
2. Waste must be recycled or composted locally
3. Food is ethnically diverse, affordable, safe and nutritious
4. Providers and educators promote awareness among consumers about cultivation, processing, ingredients and nutrition
5. Food brings people together and enhances community
6. Is produced by socially, ecologically conscious producers
7. Providers and growers pay and receive fair prices

Appendix B

Specific questions looked at when doing web-based research about individual crops:

1. Common name, family and species names
2. Growing conditions – soil, water, plant height, optimal climate/temperature
3. Seasonality – what month of the year
4. Nutritional values - % Daily value according to CFIA recommendation, nutrient specific emphasis, physiological benefits
5. Storage methods
6. Additional usage: fresh or processed
7. Academic connections: medicinal use, research done on the crops
8. Recipes that make use of the crop

UBC Farm/LFSOG specific information:

1. Years grown at UBC Farm/LFSOG
2. Variety of each individual crops if available

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â€¢ Urban green space promotes physical activity and public health. â€¢ Many US minority communities lack green space access, an environmental injustice. â€¢ US and Chinese cities have developed innovative ways to create new green space. â€¢ Urban greening can, however, create paradoxical effects such as gentrication. â€¢ Urban green space projects need more integrative sustainability policies to protect communities. article info.Â In addition, community-based organiza-tions, often aided by environmental groups, are refocusing urban browneld remediation projects on urban green space to address public health and environmental justice concerns (Barnett, 2001).