

UBC Social Ecological Economic Development Studies (SEEDS) Student Report

**The University of British Columbia Food System Project**

**Naseam Ahmadi, Stephen Ford, Alisha Hackinen, Kristine Johnson, Kelly Oliver**

**University of British Columbia**

**AGSC 450**

**April 10, 2009**

*Disclaimer: "UBC SEEDS provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions and recommendations with the UBC community. The reader should bear in mind that this is a student project/report and is not an official document of UBC. Furthermore readers should bear in mind that these reports may not reflect the current status of activities at UBC. We urge you to contact the research persons mentioned in a report or the SEEDS Coordinator about the current status of the subject matter of a project/report".*

April 10, 2009

Naseam Ahmadi

Stephen Ford

Alisha Hackinen

Kristine Johnson

Kelly Oliver

**The University of British Columbia Food System Project**

**Scenario 4b**



Inspired by:

Eric Villagomez

Andrew Riseman

Vanessa Sparrow

## **Problem Statement**

Scenario 4b represented a unique opportunity for the 2009 AGSC 450 UBC Food Systems Project (UBCFSP). Our objective in Scenario 4b was to design an enclosure that would establish a sense of space that reflects the objectives of the MacMillan garden initiative. This a valuable endeavor for Land and Food Systems (LFS) students because the development of the garden showcases the values of the LFS faculty, particularly in contributing to food security on campus through stewardship of the land. The fence distinguishes a separation of responsibility—a distinction between land leased to Land and Food Systems and land left responsible for UBC Plant Operations. The area distinguished for the LFS faculty offers opportunities for practical ‘hands-on’ learning for students and faculty (UBC Faculty of Agricultural Sciences, 2000). As a group our intentions included creating an enclosure that protects the garden and facilitating interactions between individuals and the garden. Visions for interaction include serving Agora and LFS community dinners, enticing students to visually enjoy and relax on the peripheries, and engendering opportunities for learning. Designing and implementing this fence not only engaged our groups in a tangible and hands-on learning experience, it will also continue to offer sustainable learning opportunities for students beyond this one course.

## **The Design Process**

The project started with a (relatively) brief education in the diverse aspects of design theory, specifications and execution. We were divided up into 3 groups under the guidance of Eric Villagomez, each indebted to provide a comprehensive design for the LFS Orchard Garden space. Our task was to design an enclosure that incorporated the “Program” outlined by stakeholders including LFS faculty members, Campus and Community Planning, and UBC Plant Operations. Our groups presented our individual plans 3 times to various groups of stakeholders, each time developing a fresh perspective on the practical, social and ecological concerns tied to the space. The final step we took as a group was to integrate the best ideas from each of the 3 groups into one plan, approved by all as representative of our collective efforts.

## **History of the LFS Orchard Garden**

The LFS Orchard Garden was developed from Scenario 5 from the 2008 AGSC 450 class. The Orchard Garden was designed as an expansion of the LFS Garden on the south side of the MacMillan building, and was named after the apple orchard that used to exist in that area. The garden plot lies on a westerly slope, and has full southern exposure. The garden is surrounded by the MacMillan Building on the east, portables on the north, and parking lots on the west and south sides.

The LFS Orchard Garden was proposed in order to support local and sustainable agricultural production and provide a teaching and learning space for LFS courses. AGSC 450 students (2008) conducted research on compost, crop rotations, funding,

urban agriculture, as well as connections and integration with the UBC Farm/ Centre for Sustainable Food Systems and Agora Café. Efforts were also made to secure volunteers and staff to run the garden for the 2008 season. This led to the hiring of Jian Hui Cheng as garden manager in June 2008 for the remainder of the season. Jian planted broccoli, squash, kale, flowers, garlic, carrots, beets, bush beans, cover crops and a variety of herbs, with variable success. Produce from the garden was sold to Agora, AgUS, Sprouts, LFS Community Dinner, and independently. Total sales from the garden amounted to nearly \$800.00.

## **PROGRAM CONSIDERATIONS**

### **Ecological Functions**

The garden enclosure has the potential to serve a number of ecological functions. Integrating plants into the fence creates habitat and potential niches for various communities. Enhancing diversity of an agroecosystem increases sustainability by creating balance (Gliessman 2007). By creating a variety of niches, pest species are forced to compete with beneficial organisms and potentially detrimental communities are prevented from multiplying to economically damaging levels. In addition, many flowers attract pollinators such as bees. The fruit and berries of these plants could also help sustain the local bird population which may control insect pests such as the click beetle which produces wire worm larvae (Gliessman 2007). Other plants produce root exudates which may inhibit garden pests such as marigolds which when planted densely may

significantly reduce plant parasitic nematode populations (Ploeg 1999). The enclosure also has the potential to function as a hedgerow. This would reduce pollution entering the garden as well as mitigate other environmental factors such as wind. Water and nutrient scavenging plants such as perennial grasses planted around the perimeter of the garden could limit erosion and runoff which is important as the garden is located on a slope. Planting the perimeter of the garden could also potentially increase the ability of the garden to act as a carbon sink depending on management practices and species planted.

We encountered difficulty in implementing the concept of a living fence due to several factors. First, upkeep is a concern as we need to be sure that the plants will be maintained for the foreseeable future of the fence. In addition, year round appearance of the fence needs to be taken into consideration. Many flowering plants lose their leaves in the fall and winter which is when the space will be seen by the most people. We also faced the challenge of coordinating with garden crops due to allelopathy and shading concerns. Finally, we were limited by experience as few members of the scenario had landscaping experience and we sought to produce a fence that was not only functional but also aesthetically pleasing.

### **Connecting to AGORA and AgUS**

During the planning stages our group envisioned ways in which the fence could contribute to the LFS community dinners and Agora's hot lunch menu. We felt strongly that our fence should participate in the 'harvest' that normally occurs within the boundaries. Including trellises would utilize vertical growing space and provide easy

picking for volunteers. Apples, grapes, and vine-type annuals such as squash could all be integrated into trellises. We included one single trellis in our drawings for the sake of simplicity, but the idea to extend it along the length of the fence was put forth and could still be viable. The previous year's group had suggested planting blueberries, which would be readily used by AGORA in salads, baked goods, or frozen for use in their popular smoothies. Herbs are another easy to grow crop that could be utilized by Agora and the AgUS Wednesday night barbeques. The aim of incorporating food crops into the fence faces many of the same challenges as integrating plants for ecological functions. Many crops come to fruition in the summer when students are not on campus; this requires harvesting and preservation for the school year. This challenge will be mitigated partially by the recent hiring of an Agora summer student to work over the summer, possibly harvesting from the garden crops both internal and fence-related.

### **Future Infrastructure in the Garden**

The addition of permanent infrastructure elements was a large question mark throughout the design process. It is hard to anticipate the changes that will occur in any dynamic environment, let alone a rare piece of open garden space in the boundaries of a bustling community such as UBC. Instead of focusing on specific design elements for potential inclusion in the future, we felt it was more important to generate a list of priorities, within which we referenced elements of our own design. This would hopefully serve as a rough guide for future students to expand on the project, as opportunity allows.

As outlined throughout the paper, there are ecological, social, education and practical considerations that go into building a vital, dynamic and functional area which

takes on a life of its own. It is our hope that this start we are giving it will be the foundation that propels it to ‘untouchable’ status.

### **Educational:**

Education may very well be the most important area for development of future infrastructure, simply due to the undeniable fact that student and faculty involvement, when managed properly, will develop into a cycle of personal investment and respect for the space. There is room for development of the garden to fulfill many educational roles as both an informal and formal learning space. The fence has the ability to be used as a teaching tool for many subjects including Soil, Plant, Wine, Nutrition, Food Production and Community Building. For example, trellising apple trees would provide students with the opportunity to get hands on experience with the cultivation, care, harvest and food preservation. The garden’s proximity and potential attachment to the other facets of the whole MacMillan space increases its value as a teaching tool. The growing space also has ties to the UBC Farm and serves to connect the LFS Faculty to what is being engaged with down on South Campus road. As a result, the space has the potential to become a gateway garden, encouraging students with a latent interest in these issues to make the trek out to the UBC farm. In addition, the infrastructure of the fence as a means of highlighting the garden enhances the space as a flag to advertise our values and commitment to Land, Food and Community.



**Social:**

The benches along the east wall may need a covering designed with students in mind. One of the other fence-groups came up with the idea of a living roof, with growing space and greenery. However, we feel that giving the benches cover, and designing a roof that provides a growing surface is a large enough project to warrant an entire 450 group's involvement.

**Ecological:**

The addition of coldframes to the fence over the coming years will provide an additional dynamic to the area. Coldframes represent a microclimate with the potential to extend the growing season within the garden and nourish seedlings that can be then transplanted to the garden when ready to fully mature. Our group felt it was beneficial to place the coldframes close to the compost piles, as they have the ability to produce heat through the natural process of decay. Under certain circumstances this could really boost the ability of the garden to be self sufficient, producing seeds, seedlings and mature plants in a cycle.

**Consultation with other Garden-Oriented Groups**

Integrating a collaborative learning environment is essential to the LFS Faculty and particularly vital for this scenario, as there are multiple stakeholders concerned with the land directly west of MacMillan. Our focus remained primarily on collaborating with the Scenario 4a group, as they were directly involved in developing the MacMillan Orchard Garden. Group 18 was responsible for planning and designing a three-bin-

compost system. Consequently, we collaborated with this group to ensure that these dimensions would fit comfortably into the space allotted as the composting area. They referred us to the Metro Vancouver compost bin construction manual (2002) for dimensions.

We also consulted the Garden Manager, Jian Hui Cheng. He guided our decision in determining an optimal location for the compost bins. In our design, the location of the bins provides Agora access to input feedstock, while providing garden workers access to the compost. He suggested that the bins be situated on level ground and along the east wall. This is to avoid the creation of anaerobic conditions for the compost, by the resulting drainage from the gradient (Personal Communication, February 11, 2009). In addition, Jian informed us that the existing mulched paths would be semi-permanent and suggested we build our entrances around them. Our consultations with scenario 4a and Jian guided our group's brainstorming process and directly influenced the design of our fence.

# Our Design



Image 1. View from southwest corner

We aimed to integrate the historical, ecological, and productive components into the infrastructure of our design to fit the needs of the program outlined by stakeholders. Our design was shaped by the vision of group members as well as input from other groups, including scenario 4a who worked with what was to go inside the garden. Our initial concept was to work with the theme of the four seasons, using each wall to highlight a different season and integrate the demands of the program while creating something that would be beautiful and inviting all year long.



Image 2. Overhead view of garden

Throughout the design process we aimed to use the enclosure to enhance the garden, not overpower it. For spring, we decided to include flowering vines along the western wall. As this wall faces the parking lot, we chose to increase it's height to enhance the sense of privacy in the garden. In the Southwest corner it seemed important to include an area for interaction within the student and faculty bodies as well as The southern summer wall



runs next to a heavily trafficked foot path so we chose to include an entrance flanked by planters with low bush blueberries.



Image 3. Southern entrance flanked by planters of low-bush blueberries

The berries would be an invitation for passers by to engage with the garden and the flowers would attract beneficial pollinators. The eastern fall wall would be the lowest wall and include herb planters embedded into the fence. These herbs could be used by Agora for their hot lunch meals or could be sold by Sprouts.



Image 4. Herb planters along east wall seen from path with access to MacMillan

Finally, the winter wall located to the north of the garden would be under planted with flowering heather to brighten up the winter months. In addition, the wall is the ideal location to include cold frames because it is south facing. The fence would provide structural support for the cold frames and protect them from damage. The cold frames could be used to extend the growing season further into the winter and get the earliest starts in the spring while students are still attending classes.





Image 5. Coldframes and compost bins in northeast corner

Other features included in the fence include two alcoves built to accommodate the remaining apple trees from the old orchard. The southwest alcove would be quite permeable and include benches for enjoying AgUS Wednesday night barbeques as well as planters.



Image 6. Southwest alcove featuring benches, planters and paving stones

The northeast alcove would include a trellis meant to be the primary entrance to the garden.





Image 6. Northeast corner featuring trellis as main entranceway

As discussed with other garden groups and previous garden coordinators, this would also be the location for the three bin compost system. The material our group preferred was locally available split cedar because it is long lasting, beautiful and mobile enough to be moved should the garden space expand.

## Design Amalgamation



Image 7. Benches and planters along east wall

The amalgamation process followed the presentations of each group's design to the stakeholders. The stakeholders provided feedback on each design and highlighted the strongest components, as well as potential weaknesses. Following this input, all members of the scenario discussed what would be desirable for the finished product. Erick Villagomez used this to create the final amalgamation of the fence using SketchUp which he designed to fit the needs of the program as outlined by stakeholders in addition to being practical for us to build.



Image 8. Wire and post fence for trellising grapes along north wall

Several themes of our design made it into the final amalgamation. The concept of blocking out the parking lot was included with a high west wall. In addition, the fence gains in height steadily as it moves down the slope to impart a sense of intimacy to the space. The rustic feel we had hoped to impart using split cedar will be created using branches as the vertical walls for the two kiosks in the alcoves. While not visible in the concept created by Eric, our plant selections (Heather, Blueberries, Clematis vines, fall Herbs) were accepted as a recommendation to future semesters of students. Other themes that were common to all groups included the use of planters and benches to make the space inviting as well as functional. Despite the many design challenges we faced, the

current agglomeration of the three teams' designs provides space for furthering the ecological functions of the fence in the future. The final design will be implemented in the upcoming weeks; we have already flagged where the posts will be located.

## **Conclusion**

Our entire group felt a strong sense of privilege and excitement to be included in this hands-on design oriented LFC series project. Through this scenario we gained an entirely new skill set and way of interacting with the built world. Designing an enclosure involves considering both practical aspects such as size, functionality and materials as well as more abstract topics such as aesthetics and theme. Integrating these to create a space that is both pleasant and useful proved to be a challenge, however the reward of building what we worked on for the past three months will prove to be worth the effort. A key lesson of this scenario has been the importance of considering how current structures can influence the future of a space. We hope that by building a fence that serves to enhance the garden space for growing food and community, we might leave a lasting impression that ensures some permanence for the garden and encourages more initiatives of this kind.

## Works Cited

Gliessman S.R. (2007). *Agroecology: The Ecology of Sustainable Food Systems* (2nd ed). CRC Press: NW

GRVD. (2002). Retrieved February 10, 2009 from  
<http://www.metrovancouver.org/about/publications/Publications/CompostBinConstructionPlan-ThreeBin.pdf>

Ploeg A.T. (1999). Greenhouse Studies on the Effect of Marigolds (*Tagetes* spp.) on Four *Meloidogyne* Species. *Journal of Nematology* 31(1): 62-69.

UBC Faculty of Agricultural Sciences. (2000). Re-inventing the UBC Farm: Urban Agriculture and Forestry on the Point Grey Campus. Retrieved April 2, 2009 from  
<http://www.landfood.ubc.ca/ubcfarm/documents/reinvent.pdf>