

Hungry Viking's Food Mapping Project

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March 13, 2011

Introduction

Our research group investigated if local sustainable foods can continue to be brought to Western Washington University's (WWU) Dining Services throughout the winter months. Sodexo is the food service provider at WWU and they have been committed to bringing food from local farmers through the umbrella organization Growing Washington, on a bi-weekly basis during harvest times, fall and late summer. We seek to provide affirming data of successful local crop viability through hands-on examples of other organizations that have reliable winter crops available. Through an increase in effective storage of harvest-time crops, WWU, partnered with Growing Washington can extend the sustainable local crop intake during harvest months and increase the amount of Real Food at WWU (see below for Real Food definition). In addition we hope to encourage WWU and local farmers that winter-time fresh harvest of certain crops in smaller quantities is obtainable.

We want to provide more local food intake throughout the year by determining what and if crops can grow in the winter and by advocating a local food processor (see definition below) and storage facility. The goal of the processor and storage facility is to sustain WWU's local food delivery through the winter. We have studied what foods can

survive in the winter and created a spreadsheet framework for the farmers to record specific monthly harvest of each crop to better gauge which crops should be implemented during the winter months. In addition we have investigated the feasibility of building hoop houses to help protect crops from poor weather and provide fresh winter crop harvest (see hoop house caption below).

It is important to note that we have listed many of our ideas of student involvement and future works in a below section. We will explore further how we propose to initiate an event on campus to promote winter crops through student involvement and education.

Also we wish to express our desire to empathize and understand our local farmers, dining services and other stakeholder's ideas and their challenges with this project. We acknowledge that obtaining local winter crops is difficult and is a trying task that will not be easy, but we believe it is crucial for future local food procurement and knowledge year-round.

Real Foods Challenge History

WWU's goal is to achieve a total of 20% Real Food, the total of Real Food A & B by the end of 2020. "Real food" is broken down into four core categories:

local/community-based, fair, ecologically sound, and humane. In simpler terms, real food is grown with consideration of the whole process and impact of food harvest and growth. Real food is broken down into two categories; Real Food A is a food that has two or more qualities including local, humane, ecologically sound, and/or fair trade. Real

Food B meets one of these qualifications, and conventional foods like those that the university purchases from Sysco meet none of these categories (Real Food Challenge)

Case study

We used the University of British Columbia's (UBC) sustainable foods project to explore the potential options and ideas for implementing our project. The project title was Advancing the Sustainability of Complex Institutions: The University of British Columbia Food System Project. The project consisted of 10 partner organizations with 1,200 total students involved. Additionally 160 papers created and used to facilitate the success of the project. The UBC Food systems project was listed as a seven-year project involving multiple stakeholders.

This study was initiated in 2001 and was conducted to create a sustainability assessment, share visions, identify challenges of the sustainable project, create opportunities, implement initiatives, and develop real learning opportunities. The project helped to enable many local food connections, establish sustainable purchasing guidelines, develop menus that feature in season, nutritional, and ecological choices. The University of British Columbia Food System Project has established sustainable connections as an important and relevant idea in student's minds across their campus.

Insider Interview

Our research team interviewed Nancy Toogood Alma Mater Society, Food and Beverage Manager, at UBC. From our interview we learned through the empirical work

of UBC that there can be an inherent disconnect between farmers and the university dining services. Ms. Toogood warned us of the difficulty to find a middleman or broker to facilitate the pickup and transfer of foods from farmer's hands to campus. In addition our research team saw the massive quantity of crops needed to feed a student body and from that we could better understand the challenges our own stakeholders face. Ms. Toogood stressed the importance of starting small and used UBC's example of targeting one pizza store on campus targeting only one crop, getting projections and examining that crops feasibility.

Methodology

Through interviews and case studies we learned about how sustainable foods have been implemented on other campuses and some possible barriers. Seth Vidana, the Sustainability Coordinator and Advisor of Sustainable Campus Planning Studio at WWU provided us with Real Food Challenge Final Report (DeVries et al., 2010) created by WWU students in March 2010 as well as sustainable food background information specific to WWU. WWU Dining Services Director of Operations and a primary stakeholder of this project, Chris Kenny, provided us with perspectives and challenges WWU Dining Services face with implementing sustainable foods. Another primary stakeholder, Clayton Burrows with Growing Washington was asked to gather monthly data of the current amount of produce WWU purchases as well as potential foods that could be provided during winter-time months with the use of hoop houses. Finally Students for Sustainable Foods at WWU were informed of our project and the need of their support for future works.

Research

DeVries et al. (2010) used the “Real Food Calculator” to determine the sustainability of invoiced foods and found that WWU purchased 14 % real foods based on invoices from October through November of 2009 where 11% was real food “B” and 3% was real food “A.” Most of real food “A” was purchased from Growing Washington (DeVries et al., 2010). WWU is one of the number one purchasers of Growing Washington’s produce and at Alm Hill Gardens in Everson, Washington there is a designated plot of land used to grow food entirely for WWU called “Viking Field” (Growing WA Farm Tour, 2010).

Hoop Houses

Hoop house are like a green houses little sibling. They are framed by plastic piping with a transparent plastic thrown over the framing and tied down. The goal is to protect crops from harsh winter elements, by keeping in solar heat and shielding crops from wind, rain or snow. Hoop houses could be utilized to extend the growing season, increase yields, and grow year-round crops (Hoop House for Crop Extension, 2009). Winter harvests can be possible with the use of hoop houses by planting in late summer and early fall (Jimenez et al., 2005). The estimated cost of materials to build a 12 x 40 foot hoop house is about \$600 (Jimenez et al., 2005) and in some cases, the hoop houses pay for themselves in a single season (Hoop House for Crop Extension, 2009).

Future Works

Spreadsheet

Along with the sustainable food spreadsheet, the other conventional foods will still need to be inventoried and organized in order to establish a reliable percentage of real foods purchased. When the inventory is well organized it will be possible to model how much more food would need to be purchased of the potentially available winter-time foods to assist in reaching “The Real Food Challenge.” Wintertime foods are our focus because WWU already purchases a large quantity when possible during the growing season. (Growing WA Farm Tour, 2010). Some winter-time vegetables we suggest Dining Services to consider based on their success in the same region are listed in a table made by Travis Salings (Table 1). Travis Saling has studied how to extend his harvest and has been a winter-focused, year-round gardener in the Pacific Northwest since 1992 (Who’s the Guy Behind the Site. June 2010).

Table 1. Successful Pacific Northwest Winter Crops, Sowing Dates, Temperatures, and Notes from Travis Saling (Winter Vegetable Gardening, 2010).

Plant		Sowing date	Hardy to	Notes
Arugula		August 15-September 15	15F/-9C	Holds up reasonably well to rain
Beets		Best in July 1-10, will work if sown until the 20th	20F/-7C	Can go colder with mulch
Broccoli	fall/winter	Anytime in June	25F/-4C (?)	Rain will probably kill it before the frost does
	overwintered	July 15-August 1	10F/-12C	these are the biennial sprouting broccolis

Brussels Sprouts	May 15	0F/-16C	Seriously, these taste nothing like the store-bought ones	
Cabbage (for winter)	June 1	5F/-14C (hardest varieties)	I haven't grown the spring cabbages like First Early Market, so I really don't know the timing	
Carrots	July 1-15th	15F/-9C	With mulch, these can be depended on to overwinter. An August 1st sowing still give useable, but smaller, roots. With carrots there seems to be big differences that are just related to how particular varieties grow as the days get shorter.	
Cauliflower	fall/winter	June 1-30	25F/-4C (?)	Rain and slugs tend to do mine in before the cold does
	overwintered	July 15-August 1	5F/-15C	Takes soggy soil somewhat better than sprouting broccoli
Chard	Up until early August	20F/-7C	Even if the plant dies back, often the crown survives to regrow in the Spring	
Claytonia/Miner's Lettuce	August 10-25	At least 11F/-12C	Fast growing, compact, does well under cover	
Corn Salad/Mache	August 20-September 1	At least 8F/-13C	Seems to thrive unprotected in our rainy wet winters	
Cress, Garden (Upland)	By late August	At least 15F/-9C	Biennial plants can be started as early as late spring	
Escarole/Endive	August 1-10	Reportedly 5F/-15C	Good cloche candidate, since wetness is more of a problem than cold. Bitterness decreases with frost, and varies from variety to variety.	
Favas	September, October	10F/-12C	I sow in late September. I've gotten away with sowing them in November; they will grow a little even in winter, during any spells when temps are above freezing!	
Kale	July 1-15	At least 8F/-13C	Needs no protection	
Kohlrabi	July 10-20	15F/-9C	Can go lower with mulch or under cover	
Garlic	September, October	At least 8F/-13C	I plant in late September. Basically, if the ground isn't frozen, you can put them in.	
Leeks	April-Early May	At least 8F/-13C	Big differences between varieties in terms of hardiness and bolting date. This entry reflects my experiences with Durabel.	
Lettuce	August 1-10	24F/-4C	Another good cloche candidate	
Minutina	August 10-25	~ 15F/-10C	Unusual, almost succulent leaves	
Mustard	July 15-August 10	15F/-9C	Hardiness is variable, depending on variety	

	Most types	August 10	0F/-18C	Most overwintered onions dry down in June. Waterlogged winter soils can be a problem for all overwintered onions
Onions	Walla Walla sweet	September 1-15	Reportedly -10F/-24C	Walla Wallas dry down in July.
	Scallions	June-September	At least 10F/-12C	This applies to Allium cepa types of scallions. A. fistulosum types are much hardier and non-bulbing, but also are less tender and hotter in flavor.
Parsnip		June 15 - July 1	At least 8F/-13C	It's fun trying to keep these seeds damp until they sprout!
Radichchio		July 15	Reportedly 5F/-15C	Leaf types are easier and more reliable. Don't dawdle in sowing this one!
Radishes		Through September	Uncertain	Various rots and soil dwellers spoil mine by midwinter, even though the plants are still alive
Spinach		August 1-15	At least 8F/-13C	Under a cloche they can be depended on to overwinter

Taste Off

Some possible winter-time foods may be unfamiliar to WWU students and faculty that eat at the dining halls, which may discourage Dining Services from purchasing certain types of food. Therefore it is proposed to develop and advocate a promotional event featuring local winter foods such as carrots, squash, and potatoes (in addition to other viable winter crops), at the Viking Commons ready to eat and clearly labeled at the pre-established salad bar. The triangle information cards located at *each* table are suggested to include nutritional information for provided winter-time crops, where the crop was grown, and small pictures of the crops and farmers. To bring fun and educational aspects while promoting local **winter-time** foods in the Dining Hall we have asked Students for Sustainable Foods to help facilitate a Taste Off. We seek to create an interest in students, to build awareness of what they are eating and how this food arrived at WWU as well as feedback to know which foods were favored in what types of meals.

Food Processor and Food Storage

To institutionalize the project we also recommend that a food processor and food storage area be established. A food processor extends the storage life of crops and stores them effectively, through primarily canning or freezing, to supplement the late winter months, when the non-processed stored food, (i.e. straight from the ground to storage) have gone bad. Processed foods means food that has to be cleaned, cut, washed, and stored. According to Ian Finch the Sustainable Food Director from University of Montana in Missoula, the University's Farm to College program would not have been possible without a food processor. Through Finch's experience the sustainable foods are more expensive, but as processing of these food became more available, larger amounts of food could be purchased and eventually the cost decreased. The environmental studies students at University of Montana contacted the marketing department for their assistance on making educational posters and cards identifying which foods came from which farms, we suggest to get our marketing department at WWU involved as well.

Growing Washington has very recently started to develop and implement a food processor facility. However, their processing capability is very small and in the initial phases of development (Clayton Burrows). Because it is essential to have food processing to extend the storage life of crops through the late winter, it is necessary to encourage Growing Washington to further develop their processing capability **and or** find a different storage and processing facility. Clayton Burrows with Growing WA has said that he has plans to develop their food processing capabilities. We have also found an alternate food processing/storage facility, called **Bellingham Cold Storage**, located in

Bellingham. They have a large warehouse for rent currently, (March, 2011) with ability to store and process food (<http://www.bellcold.com/index.html>)

- 34,000 sq. feet
- 14,600 sq. feet wet processing area
- 14,000 sq. feet dry storage
- 670 sq. foot freezer

Contact at Bellingham Cold Storage:

Mike Roberts: (206)-718-4734

Jose Roques: (360)-201-7234

Intervale Community Farm in Burlington, VT stores over 20,000 pounds of crops each winter for their 175-member winter community supported agriculture (Winter Crop Storage, 2010). A documented report of a winter storage retrofit and items required for successful crop storage is available by farm director Andy Jones, from Intervale Community Farm, Burlington, VT (Winter Crop Storage, 2010). Direct information and tips is accessible from their report on crop storage to supplement the winter months. For example Mr. Jones documents, “We use a variety of containers -- lidded totes, poly bags, wooden bulk bins -- to store produce.” The key for preserving quality for us has been to keep the produce protected from direct airflow” (Winter Crop Storage, 2010). We encourage further analysis of Mr. Jones full report via our hyperlink listed in the reference section below.

Conclusion

We as researchers seek to advocate a four pronged approach to increasing local winter foods. **First**, increase in food storage, **second**, select *fresh* harvest of viable winter time crops, **third**, find and use a food processor to sustain stored local foods longer, and **lastly**, have cooperation between all stakeholders. We are confident that WWU can lead the way setting an example for other institutions in providing year round local food to their campus.

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