Learning and Growing with Joseph and Josephine's: What I learned through my internship

Summer 2016
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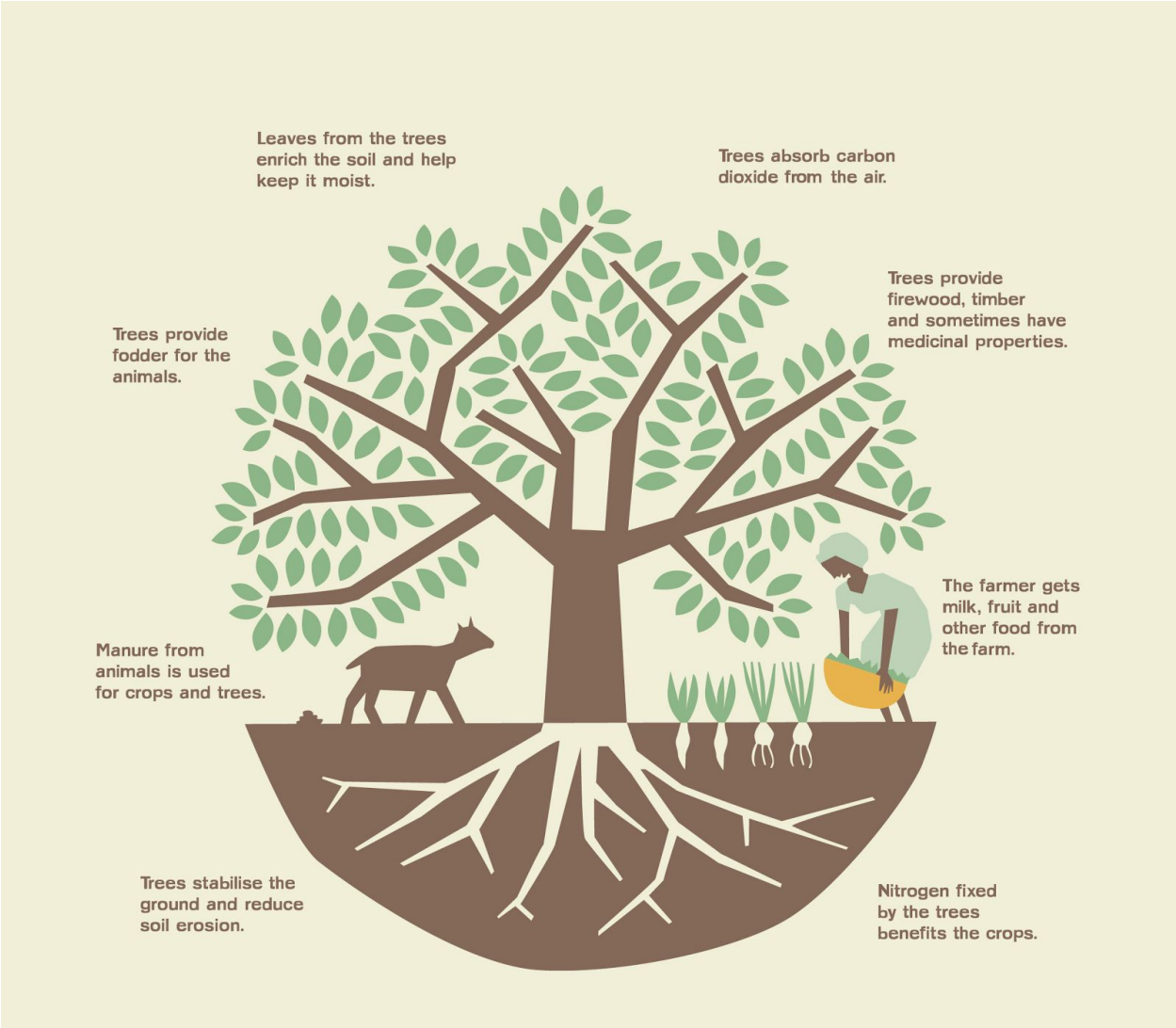
The farm in Kaupo

This summer I had the opportunity to join Stacey and Hi'ilei in Maui, Hawaii to intern for their family agribusiness and social entrepreneurship venture as a part of my Kessler Engineering Fellowship at Cornell University. I learned about their business through my good friend and fellow CUSD teammate, Kavin Lam, who shares a passion for sustainable agriculture and community development. Thanks to Kavin's introduction, Hi'ilei and I met for coffee at CTB in Ithaca, New York last March, and she shared with me her family's mission for social responsibility and environmental stewardship for their '*aina* in Kaupo, Maui.

The cows love these avocados!

Harvesting Lychee with Stacey and Eddie

Hi'ilei's eyes were bright and animated as she described her vision for Joseph and Josephine's. Rather than abiding by conventional agricultural practices, her family farm employs *agroforestry* techniques, where trees and shrubs are grown amongst crops and pastureland, emphasizing a regenerative agricultural ecosystem in order to foster more diverse, productive, and sustainable land-use systems, thereby limiting the needs for inputs such as additional water or fertilizers. Their farm produces organic tree fruits and nuts, including guava, mango, avocado, coconut, lemon, papaya, lychee, jackfruit, macadamia nuts, and value-added products such as cocktail syrups.



The cycle of Agroforestry
<http://www.viagroforestry.org/files/2014/05/Tree-Illustration_PLAIN-01.jpg>

Hiking around the farm with Stacey and Buddy

I was attracted to Joseph and Josephine's because of their emphasis on agroforestry, regenerative land-use practices, long-term sustainability, community integration, and agricultural social entrepreneurship.

The following is a description of what I learned this summer through my internship and why I believe the food industry offers my generation the greatest opportunity to transform our social systems and to create a more just world. Mahalo, Stacey, Hi'ilei, Maile, Carmela, Eddie, Daisy, and Ginger, for welcoming me into your ohana this summer. I am grateful to have shared almost two months with your family, and I look forward to the continued growth of Joseph and Josephine's!

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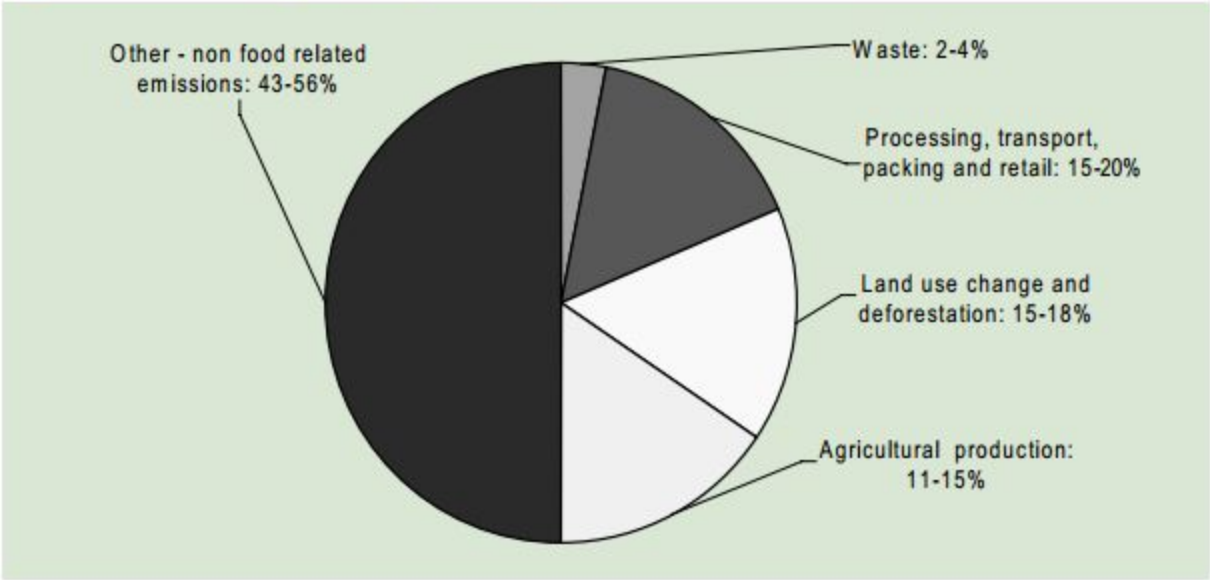
The current global food system is responsible for nearly *half* of all anthropogenic greenhouse gas emissions, according to the United Nations Conference Trade and Development (UNCTAD) (source). Food production is also the world's largest economic activity, including more transactions and employing more people than any other industry. Food is primal, personal, the root of traditions, cultures, and the evolution of human life. Through this industry we remember that our own health is wholly dependent upon the health of the planet. Transformation of food production and distribution offers not only the opportunity to seriously slash GHG emissions and reduce natural resource consumption, but also to strengthen rural and poor communities and to alleviate the burdens they face. (Agriculture-driven growth is three times more likely to reduce poverty than GDP growth in other sectors of the economy (source)). These are my motivations and inspirations to innovate within food and agriculture.

Stage of food chain[a]		Emissions ($MtCO_2e$)[b]	Year of estimate	References
Preproduction	Fertilizer manufacture	282–575	2007	24
	Energy use in animal feed production	60	2005	25
	Pesticide production	3–140	2007	24
Production	Direct emissions from agriculture	5,120–6,116	2005	26
	Indirect emissions from agriculture	2,198–6,567	2008	Emissions from the supplementary material for Reference 23 combined with proportion due to agriculture from Reference 28
Postproduction[c]	Primary and secondary processing	192	2007	Calculated from Reference 29
	Storage, packaging, and transport	396	2007	Calculated from Reference 29
	Refrigeration	490	2004	30
	Retail activities	224	2007	Calculated from Reference 29
	Catering and domestic food management	160	2007	Calculated from Reference 29
	Waste disposal	72	2007	Calculated from Reference 29

Estimate of the relative contributions of different stages of the food chain to global GHG emissions
<http://www.annualreviews.org/doi/pdf/10.1146/annurev-environ-020411-130608>



Contribution of the global food production system to total GHG emissions
<http://unctad.org/en/publicationslibrary/ditcted2012d3_en.pdf>

My summer and Kessler Fellowship began with a series of questions:

What are the common challenges facing agricultural businesses with respect to operating sustainably? What's missing? How does a farm evaluate the natural cycles already existing on the land and then ensure that their own agricultural practices are in phase with and supportive of these cycles? Is *local* really better? To what extent? How do you prepare a farm that will sustain the family and community for seven generations?

The question of *local* is particularly pertinent in Hawaii, where 85-90% of food is currently imported (source), making Hawaii especially vulnerable to global events that might disrupt shipping and the food supply. Further, economists have demonstrated how replacing just 10% of the food imported in Hawaii would result in $313 million and 2,300 jobs retained annually. In response, the state has enacted programs to increase demand for and access to locally grown foods, increase the production of locally grown foods, and provide policy and organizational support to meet food self-sufficiency needs

So if the hype is real and sourcing food locally really is so good for the economy, the environment, and the community, then what is preventing us from doing it *now*? The answer I discovered this summer lies in the *financial burden on farmers.* Put simply, there is no money to be made for small farmers to wholesale their outputs (produce, grains, etc) with respect to the amount of labor and capital required as inputs. Current food prices in supermarkets absolutely do not reflect the high costs of food production, thanks in part to government subsidies. Farmers sell at wholesale prices but pay retail prices for their inputs (fuel, seed, pesticides, fertilizers, etc). While the price of farm *outputs* has remained relatively stable over the past couple

decades, the price of farm *inputs* has more than doubled. The result is a *treadmill effect*, where farmers are pressured to adopt technologies in order to increase productivity, which then results in falling crop values because of surplus of supply, again leading to heightened demand for additional productivity-increasing technology.

Today's farmers need more land, more equipment, and have more expenses so that they can produce more output, all for the same (or less) profit. This treadmill effect is what has led to decreased crop diversity and increasing scale of operations, where smaller players often cannot survive financially. It appears that if *local* is the answer, or even one of the answers, then we need a different value system and widespread consumer-education surrounding the effects of centralized food production. (Note: I am an advocate for the need of *farm diversity*- the existence and support of small farms, medium farms, big farms, family farms, industrial farms, organic farms, urban farms, greenhouse farms and conventional farms- in order to make nutritious food accessible to the global community. More on this in the next post.)

Aside from sheer economics, the main issues that I have encountered facing local and small-sized food producers include a general lack of technical and social infrastructure for their processing and packaging needs as well as distribution challenges. Through my experience with Joseph and Josephine's, I saw how this was particularly poignant in Hawaii. My task for the summer was to design packaging for a holiday gift box featuring their cocktail syrups. Shipping quotes for just 100 glass bottles often exceeded $2,000 and glass bottle manufacturers simply did not exist on-island. Labeling and packaging design companies were not interested in our business given our initial small size. Processing equipment that met our bottling and production requirements was equally difficult to source. Ultimately, I concluded that working independently as a small-sized food or agricultural business is nearly impossible if financial success in today's market is the goal.

This is a problem. Our current food-system landscape is nearly impenetrable for newcomers (although success stories do exist), and many regions lack support and infrastructure for new players and innovators. In our increasingly complex and diverse world, it is important that our food and agricultural practices reflect this diversity in order to ensure food security and stability. Concentration towards narrowing strategies and plant species is dangerous, especially given the rising threats associated with climate change such as new pathogens and weather patterns (more on this in a later post). Thus, a stable food system is one that **encourages diversity** in agricultural practices, technologies, crops, farm sizes and distribution strategies, and **invites new players** to enter too.

Amidst the sensationalism of the food industry today and the big scare of the "industrial farm," it is important to note that family farm operations still make up the vast majority of farms, and that there are few "purely-industrial farms." Here is some census data on this, showing that 87% of farms in the U.S are owned by families or individuals and that only 4% of farms are considered "corporate." See the table below for additional breakdown.

Farm Type	Number of Farms	Percent of Farms
Non-Family Farms	91,177	4.1
Very Large Family Farms	101,265	4.6
Large Family Farms	86,551	4.0
Limited Resource	308,837	14.0
Farming Occupation/Higher Sales	100,126	4.5
Retirement	456,093	20.7
Farming Occupation/Lower Sales	258,899	11.7
Residential/Lifestyle	801,844	36.4
TOTAL	2,204,792	100.0

Farm Types in the U.S., 2007 Census Data
<https://www.epa.gov/sites/production/files/2015-07/documents/ag_101_agriculture_us_epa_0.pdf>

Further, just because one farm does something one way, does not mean that all farms do it or need to do it in that way. Farms must decide what is best for their operation and their community, in their particular location and season. While it is important to question any new technology and to keep any form of business in-check, it's equally crucial to avoid sensationalism and fear-based marketing and instead fight to change the real problems we face:

- **Difficulty of Farming**
- **Waste**
- **Hunger and Access**
- **Environmental Impact of Farming**

I believe that if we took all the time, money and effort spent debating which farming method (conventional, organic, urban, etc) is best and instead invested that time, money, and effort into making *each* method better, we would make much more progress towards solving these real issues.

Most importantly, let’s thank our farmers for the remarkable and abundant food system we already have.

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<u>Suggestions for Enhanced Food Security and Sustainability</u>

While each of these points deserve a full post and this list is not exhaustive, here is an overview of some of my ideas and the strategies that I support:

- **Reducing meat consumption** and energy-intense diets for both environmental and health reasons

- The need for **community food hubs** and access to shared processing and packaging infrastructure. Think of shared grain mills, ovens, processing equipment and packaging supplies, places where local food producers can share their ideas, successes, woes, tools, and knowledge. These community food hubs could also serve as central locations for consumers to buy their foods and thereby lessen costs associated with distribution.

- **Full costing**, or putting a monetary value on externalities and natural resource degradation. GDP models do not reflect the ways in which we hurt future generations by limiting their access to natural resources through current consumption habits

- A **DIY Sustainable Packaging Design** website. Think Custom Ink for small food producers to *design* and *source* their (sustainable and minimal) food and beverage packaging. If I wasn't about to graduate and in need of a real job, I would start this. Please contact me if you decide to do this.

- **Cooking the Whole Farm** - Dan Barber coined this one. The midsize category of farming does not resonate with Americans because there is no food culture attached to it. "Eaters" are still driving the trends for what farmers choose to farm. In order to create a truly sustainable food system, we must create a culture that *celebrates* the entire farm. For example, really delicious wheats are the products of a complex system of crop rotations. How do we encourage cuisine that celebrates all of these crops? (And not just the final wheat product.) Herein lies the problem with the Farm-to-Table movement- we are still guilty of reducing sustainability down to what we buy for dinner. How do we address the "bycatch" crops (millet, flax, soy, buckwheat, rye, dozens of other legumes and grains)? Let's not just privilege the ingredients we wish to cook. Rather, it is important to integrate the *entire class of integral yet uncelebrated crops* if we truly desire a delicious, nutritious, and sustainable food system.

- **Connect children** with the outdoors and animals early and **educate** them on how we get our food. Inspire a love for nature early, and it will never go away. In New York State, there are 4H programs largely focused on keeping kids interested in agriculture. However, there are very few programs for urban or suburban kids.

- **Solar and Wind and Electric Cars.** These are great sustainability and GHG reduction strategies and we know they work. Rather than chasing the next big techno-wizardry fix, let's get into gear and expand what's already working. We need to act now, and these work.

- **Buy local**, especially your food. Support your local farmers as much as possible. This grows your local economy and builds your community.

- **Get your information about food from your experts and local farmers**, and not from crazies online (including me!).

- We need **more farms and agribusinesses like Joseph and Josephine's**! Their incorporation of agroforestry principles maximizes soil quality and ecosystem vitality.

- **Thank a farmer today!** They work really hard to ensure that you are fed.

Hi'ilei and friends took me to Red Sands Beach in Hana, Hawaii- not too far from the farm!

Concluding Remarks

All in all, this was a transformative and enlightening summer, both in terms of my awareness of the food industry, and in terms of my understanding of my own limitations, opportunities,

strengths, and weaknesses. Maui encouraged me to slow down, to think things through, and to consider how my actions affect the environment and community around me. I was continually inspired by the kind, thoughtful, and gentle people I met in Maui- ranging from people I crossed paths with in the supermarket, at the beach, at my yoga studio, or just wandering around town. Maui showed me how I am a part of this environment and this community, and not at all separate. She taught me how sometimes the problems we face are overwhelming and paralyzing when approached alone, but that we can each play our part, and that we are so much stronger together. She challenged me to quit talking and to get to work and to use my voice, but to also remember to make time for play and interruptions too, and to always give thanks to our aina and kai for all that they provide.

Malama Pono,
Kelsey Kruse

I know of no pursuit in which more real and important services can be rendered to any country than by improving its agriculture - George Washington 1794

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