



This morning I am going to layout our food system in the U.S. and some changes that have occurred within it over the last 100 years.

- My interest in food & ag. → study sustainability
- Intrigued by how communities grow and get their food.

I was inspired by our discussions around indigenous reciprocity with the earth, and wrote my op-ed on why incorporating sustainable indigenous practices back into the way we grow, consume, and view our relationship food could have an infrastructural change.

Background

- Infrastructure and energy regimes
- Visibility
- Food today
- Mutual aid and reciprocity

However, this is a long road and we first have to understand how food became industrialized and integrated into the mineral energy regime, and how this changed the way consumers think of food.

- First, I will go through a brief progression of the infrastructure and energy sources used in the distribution and production of food to paint a more realistic and honest picture for us all as consumers, highlighting some of the injustices within this system.
- What the food industry looks like broadly and offer hope around mutual aid solutions and reciprocity for food and agriculture in our communities.

“Power needed for farm operations was supplied by work **animals and humans**.

Food for the farmer and members of his family, and feed for the work animals came from the farm. **Fuel** was obtained from the farm **woodlot.**”



Farming in the early 1900's - U.S. Census Bureau

To begin, I wanted to explain what farming was like for households in 1800'- early 1900's.

- Description from a Census analysis in 1950 = good
- [Read]
- Directly points to how farming relied on organic energy and the direct relationship that people had with their natural environment.

Early Infrastructure

Ownership

- Homestead Act - 1862: land claims of 160 acres
 - 1909: 320 acres for crop land
 - 1916: 640 acres for livestock



Distribution

- Transcontinental railroad (completed in 1868) and waterways

First = Homestead Act in 1862 by Abraham Lincoln.

- Most fundamental component when looking at early infrastructure of ownership and farmland in the United States.

The act made it possible for any man or woman to claim up to 160 acres of government land for very cheap; the one condition was that the owner had to build a house and successfully farm on their land for 5 years. So after earning his home, one can imagine that this infrastructure instilled an even deeper value for one's individual property.

Transcontinental railroad was completed not long after the Homestead Act. In addition to reliable waterways like the Mississippi river, the ability to transport goods to and from faraway places sparked what I would call a revolution in how farmers conceived the ability and extent of their production. They no longer had to produce for just their family, but had the ability to distribute goods for profit.

I also think that mindset expanded into more capitalist modes of production as the homestead act expanded its parameters for those committed to larger scale agriculture.

Industrialization of Production

Organic → Mineral



- Steel plows, combines, traction engines (tractors)
- World War I + II = Agriculture boom
 - Government propaganda and pressure
 - Birth of fertilizer
- The Green Revolution: 1960's+
 - Widespread use of chemical enhancements, seed technology, U.S. exports



More supportive infrastructure = inventions purposed for efficiency + convenience → **machinery**

- Steel plows and the tractor
- These advances expanded how much work a farmer could achieve each day by creating efficiency and convenience in farmer's lives and the lives of their product
- Showcase integration of the mineral energy regime + eventual reliance on it

New inventions take time to become accessible.

- Only those able to invest to improve operations
 - Motivation to participate in the new distributive market
- These were the farms that made the adjustment into industrial agriculture
 - Beginning of the century: 5 million full-time farmers
 - 1950: there were still about 5 million, only 1 million were able to remain full-time

Both **World Wars** had a huge impact on the production of food, as it did many industries.

- Farmers were pressured into producing more grains and meat to feed soldiers. In addition, consumers were also pressured to change their eating habits to save for war efforts.
- Similar to what Rachel Haverlock* told us about forever chemicals from war repurposed for waterproofing and teflon products, the excess ammonia produced for explosives in the war was later purposed for fertilizer. Many recognize WW2 as the kickstart for industrial production and use of chemicals in agriculture, which is one of the most negative ecosystem impacts it has

A final important marker that truly industrialized agriculture was what scholars call the **Green Revolution**.

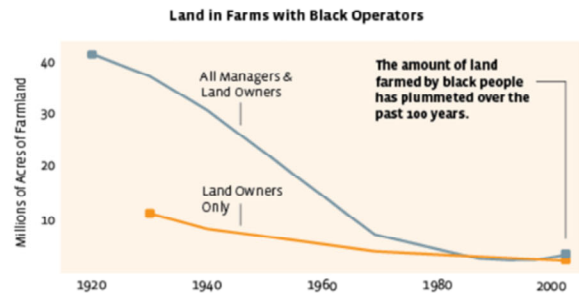
- After WW2, the U.S. pushed for more research and development into the industry as they strove to be one of the top powers in the world (everyone needs food).
- This time period is trademarked by a focus on developing commercial fertilizer and pesticides, seed technologies, and the consolidation of companies into large supply chains of retail markets for farmers and consumers in grocery stores.

Now, in the 21st century, the United States stands as one of the top three leading countries for agricultural GDP, second to China and India.

Production Infrastructure

Racial Injustice

- Sharecropping: *Forty acres and a mule*
- Decline in black-owned farmland
- Bracero Program 1943-1965



Not in federal Census and GDP reports: underlying ownership structures that have created inherent racial injustices into agricultural systems.

Keeping our lens within agricultural production and changes in the 1900's, the practice of sharecropping illustrates how ownership was structured to maintain control over production.

- Sharecropping allowed liberated slaves and their families to rent small plots of land, around 40 acres, from "landlords" that were often former slave-owners or of the same owning family. The black farmers owed a share of their yearly crop yield to the landlord, and this share often grew as a debt as farmers were reliant on landlords for equipment, transportation, etc..

Sharecropping was used to maintain the same labor force that had previously been found on plantations, just through a different mechanism.

Some black families were able to build their own capital and black-owned farmland grew to make up 14% of all farmland (historical high).

- However, credit and loan programs ran by white USDA officials disadvantaged black farmers, and many lost their land
- Current level is around 2%

Another invisible infrastructure that exploited farm workers of color was the Bracero Program with Mexico.

- Mexico would supply temporary laborers during shortage, specificity in agriculture.
- Shifted labor force from most black farm workers to hispanic
- The Bracero program extended for 22 years when it was originally meant to be temporary during the war



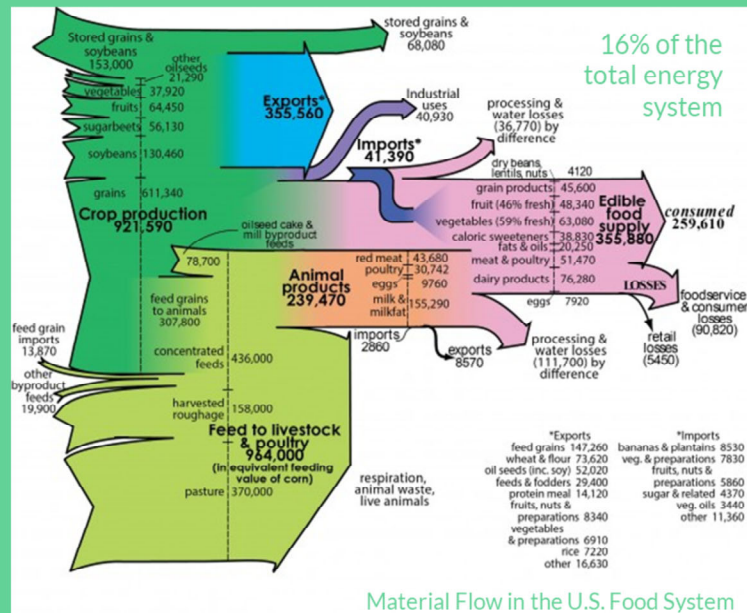
Where We Are Now



Questions.....

- Thankfully the rest of my presentation has a lot of graphics.

Energy & Resources



.... Despite the reliance our food system has on fuel, machinery, and other elements of the mineral energy regime

- Our food is just as reliant on the natural world and organic energy
 - But do we think of farming as tractors and fields with only corn planted
 - OR do we think of it as soil health or hand picked berries?
- Human labor as one form, in addition to energy from the sun, freshwater, soil nutrients

I added these infographics to illustrate the amount of resource conventional agriculture uses, in addition to the amount that is wasted.

Blue = the resources we're wasting when we waste

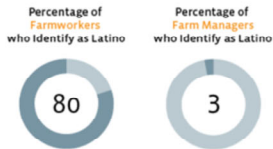
This shows **material flow in the U.S. food system**. It was created through UM's graduate program for sustainable systems in SEAS. This research team did an analysis on the life cycle of food produced in our country, so the arrows you see account for the energy inputs into our food from how it was grown, transported, and where it ended up post-consumer use.

- How materials and energy flow, efficient/non uses of resources in agriculture, painting a picture of the impact of agriculture on the U.S. energy system
- Movements for plant-based diets doesn't come from stereotypical "tree-hugger" it's just ecologically wasteful

Ownership Infrastructure: Consolidation

- Farmland

While those who run U.S. farms are overwhelmingly white, the roughly 3.5 million people who do the day-to-day work of growing and harvesting food are not.



- Food brands and retail spaces

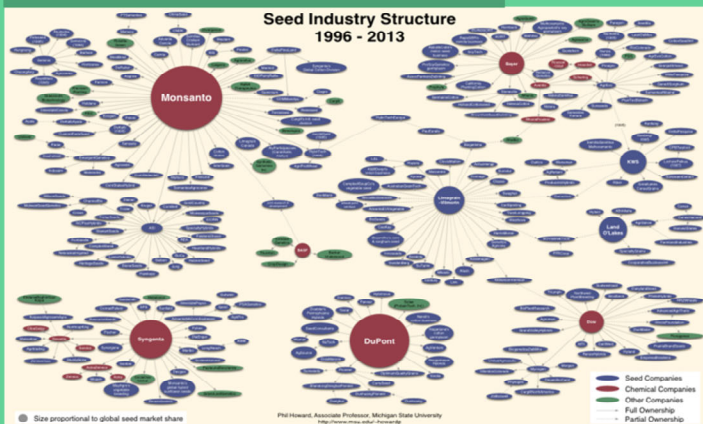


Moving on from energy regimes and revisiting ownership structure, you can see that further consolidated occurred in late 1900s and on...

- Since the loss of black-owned farmland in the 1930s-ish → farm owners and managers = white
- However, laborers are still mostly hispanics
- Familiar brands have all been put ownership in the hands of those who had the capital and market power to advance themselves

Ownership Infrastructure

“The top four food retailers sold almost 45% of America’s food in 2016, compared to only 17% in 1993.”



Conglomerate companies disguise themselves as brands

- Economic reasons, but more prevalent to this presentation...
- Separating familiar brands like Lays Chips or Eggo waffles in grocery stores allow the conglomerate seed companies, processors, and manufacturers in the food system to operate invisibly to consumers.
- Different brands and subsidiaries that maintain their name also makes consumers believe their purchase decisions represents a choice and economic influence - when all the snacks you choose from may be owned by the same company, supporting the same bottom line

Alternative Infrastructure...

- Agricultural Cooperatives
- Restorative Agriculture
 - Incorporates indigenous practices
- Other positive things...
 - Growth of Farmers Markets
 - Argus Farm Stop
 - Double Up Food Bucks
 - UM's Sustainable Food Program
 - Class at the Campus Farm in the fall! (?)
 - Laura Penniman and Soul Fire Farm



Many movements try to bring visibility to issues of environmental and racial injustice, corporate consolidation to create alternatives that have the ability to reconnect people with where their food came from.

- Sharikas presentation + my own research of agricultural cooperatives
 - Mutual aid by making internal collective decisions that provide support, inherently understand the need, and operate
 - Sharing tractors, washing stations, etc.
- Restorative agriculture is a more science-based approach to change
 - Methodologies incorporate the indigenous value for mutualism with the environment
 - Goals to better the agro-environment while benefiting from it.

In our state community alone we've seen positive food movements in the last decade

- In Michigan, farmers markets have increased by >35%
- New business models like Argus Farm stop that return 55% more profits to farmers than conventional grocery stores
- The Double Up Food Bucks program for those with food stamps, a program that started in Michigan that incentivizes program recipients to buy fresh food by returning

Like I said at the beginning, it's a long road ahead, but the power exists within communities smaller-scale farmers and bring visibility to consumers

Questions?



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