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Turning over the Leaf: Following the Lettuce Commodity Chain in Hawai'i

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Lettuce bridges the gap from niche specialty crop to relatively inexpensive health food. As the highest value vegetable crop in the United States, it has a significant place on the American plate. In Hawai'i, lettuce is the top 12th overall agricultural commodity, and the highest value vegetable product in Hawai'i. While growers in the continental United States make most of their profits from head (iceberg) lettuce, specialty lettuce has more than double the value of either head lettuce or Romaine and is the fastest growing lettuce sector in Hawai'i. Additionally, far more acres are dedicated to specialty lettuce than any other lettuce types in Hawai'i. The goal of this article is to explore why specialty lettuce has such a large market share in Hawai'i, by interviewing farmers and organizers and by using statistical data provided by the United States Department of Agriculture. I conclude the structure of high-value lettuce production is driven by the nature of Hawai'i agriculture, which is primarily made up of small farming operations that cannot compete with the economies of scale from imported lettuce, and instead require a market niche with a price premium to survive.

Introduction

According to a 2016 survey of crop values by the United States Department of Agriculture (USDA), lettuce is the highest value vegetable crop in the United States (US). The value of lettuce carries over to the state of Hawai'i, where it holds the highest farm value of any vegetable (USDA: Hawaii Vegetable and Melon Crops Report (HVMCR), 2017). However, while iceberg lettuce dominates sales and production in the continental US, leaf and specialty lettuce are far more prominent in Hawai'i agriculture. The farm value of leaf lettuce is more than double the value of either head lettuce (iceberg) or Romaine in 2015 (USDA: HVMCR, 2017). This paper will explore why farmers in Hawai'i pursue specialty lettuce, as opposed to mainland farmers who almost exclusively grow head lettuce.

I am a recent graduate from the Geography Department at University of Hawai'i at Mānoa and currently on Oahu pursuing job or academic opportunities in my field. A modified version of this paper was written for a class entitled Agriculture, Food, and Society, taught by Krisna Suryanata, with whom I've been working as a research assistant studying agriculture and food initiatives in the state of Hawai'i, in collaboration with Mary Mostafanezhad. The goal of this project was to pursue and understand the commodity chain of an agricultural product. I was aided in this endeavor by a wealth of resources made available by the past year of research into agriculture, which yielded many personal interviews with farmers and insights into the agricultural context of Hawai'i.

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Methods

In writing this paper, I gathered information from a variety of resources. First, I used data available through the USDA and the National Agricultural Statistics Service to determine value and acres harvested of lettuce nationally and in the state of Hawai'i. This was done to create a broad, statistical framework for my paper. Second, I consulted the relevant literature on the subject including the books *Manufacturing Green Gold, Food and Power in Hawai'i, Lettuce Wars, Fresh,* and *Citizen, Gender, and Work*. This was to gain a social context for the lettuce industry, which encapsulated labor conditions, niche markets, and consumer attitudes. Third, I personally interviewed farmers and used interviews by faculty in the Geography Department at the University of Hawai'i at Mānoa to get farmers' perspectives on the challenges and opportunities they face, as well as to gain a better understanding of the local commodity chain. Finally, I viewed and transcribed many interviews of farmers made available by ThinkTech Hawaii, through their Food and Farmers series.

Lettuce Value and Acreage

To understand the production and transactions that led to our current consumption patterns of lettuce within the state of Hawai'i, we first need to turn our attention to the mainland US. Not only is it necessary to contextualize the national lettuce industry, because it has such a large effect on the industry in Hawai'i, but also because most lettuce in Hawai'i is imported from the continental U.S. (NASS, 2011). Currently, the US is the second largest lettuce-producing country behind China. The U.S. produced 20% of the world's lettuce in 2004, totaling $2 billion, making lettuce the leading vegetable crop in terms of value (FAO, 2017). California and Arizona are responsible for nearly all lettuce production in the US, with California accounting for 71 percent and Arizona 29 percent of U.S. production in 2013 (AGMRC, 2017).

According to the National Agricultural Statistic Service (2011), around 1 million pounds of lettuce were grown in Hawai'i in 2008, but 8 million pounds were imported. More recent comparisons of locally grown and imported lettuce are unavailable by the National Agricultural Statistics Service, because of "reduction-in-force eliminating all Market Analysis and News Branch positions." Nonetheless, production of lettuce has continued to rise in the state of Hawai'i. Lettuce had the third largest volume of any vegetable in 2012 at 4.7 million pounds, up 2.65 million pounds or 129 percent from the previous year, the largest volume gain measured by percent of any vegetable (NASS, 2013). In 2016, 445 acres of lettuce were harvested (USDA: HVMCR, 2017), over 3 times the amount harvested in 2001 (Martin, 2002). While this number is relatively high for the state of Hawai'i, it is still very small on a national scale. In 2015, 124,510 acres of lettuce were harvested in the US (USDA: Statistics, 2016), making Hawai'i production around 0.004% of acres harvested in the same year (USDA: HVMCR, 2017). Demand for lettuce in Hawai'i has also been high according to farmers. Sean Anderson, a farmer in Waimanalo said in a personal interview, "Some weeks you cannot bring enough lettuce [to the farmers' market]." (Anderson, 2016).

Despite the high overall demand, traditional lettuces, such as iceberg lettuce, have declined in production and more romaine lettuce is being grown instead. By far the largest lettuce sector in Hawai'i is the combined category of "other" lettuces, which constitutes half of the total farm value of lettuce (USDA: HVMCR, 2017). These include leaf lettuces and salad mix. This reflects a broader trend in Hawai'i of small farms surviving by embracing unique, niche markets, which can be far more lucrative and sustainable for their businesses than general produce.

Agricultural Labor

Agricultural labor remains a contentious issue in the US. The US Department of Labor's National Agricultural Workers Survey (NAWS, 2017) studied crop workers between 2007 and 2009, and concluded 71 percent were foreign-born (67 percent in Mexico and 4 percent elsewhere). Additionally, 48 percent of crop workers indicated they were not legally authorized to work in the US. While this does not pertain specifically to lettuce, these statistics by NAWS cover all agricultural labor in general, of which lettuce is a sizable portion. On average, farmworkers are the lowest annual income earners of all US workers, both because their hourly wages are relatively low, and because many farmworkers can only find seasonal employment in agriculture (Hertz and Zahniser, 2017). Places with high land values, such as California and Hawai'i, have a high fixed capital cost, which can raise the cost of their products. Most farms seek to increase their profitability by lowering labor costs, which

can be done on small farms by relying on unpaid labor from family members or volunteers, but in many cases, farmers choose to recruit low cost labor that exploits inequalities in race, gender, and citizenship (Friedland et al. 1981; Mitchell, 1996; Neuburger, 2013; Thomas, 1992).

This inequality between owners and farm laborers has persisted since the origins of the lettuce industry. While the earliest growers made an incredible fortune, their laborers were often underpaid and lived in terrible conditions (Freidberg, 2009). In the 1930s, while the growers held neighborhood barbecues between growing seasons, and hosted back-room dice games, where bets could reach as high as $10,000 a roll (Tavernetti, 1950), the people who physically labored in the fields commonly lived in wood and tarpaper shacks on the edge of town, even before the Great Depression era (Jones, 1947; Lamb, 1942).

Hawai'i hasn't been a stranger to human rights violations in the agricultural workforce either. In 2010, over four hundred Thai workers were allegedly brought to Hawai'i under false pretenses of high-paying agricultural work, in the largest case of human trafficking in American history. Despite paying between USD 9,000 and 21,000 to secure their employment through a recruiting company, upon arrival their documents were confiscated and they were forced to work at local farms for free or at lower wages than promised (Downes, 2010).

The problem of labor cost is particularly acute in Hawai'i. While the typical hired farm worker earns about $12.10 an hour in California, in Hawaii they earn $14.72 per hour (NASS: Hawaii Agricultural Labor, 2013). Farmers in Hawai'i typically use several techniques to offset their high costs and increase the profitability of their products. Many farms in Hawai'i lower their cost by using volunteer labor through programs like WWOOF, which can be beneficial to farmers, but come with tradeoffs (Mostafanezhad et al. 2016). However, most small and independent farmers rely on high-value markets and have developed their niches through community-supported agriculture, networking with high-end chefs, or agro-tourism (Guthman, 2004; Mostafanezhad et al. 2016).

Niche Markets

To get a better understanding of the small-scale, niche lettuce industry in Hawai'i, I interviewed Kyle Kakazu (2017), the founder and operator of MetroGrow Hawai'i, the first indoor farm of its kind in the state. Kakazu produces almost exclusively specialty varieties of lettuce, and sells virtually all his products to restaurants. He works full-time at his downtown location and has two part-time assistants from the University of Hawai'i agriculture program. As an indoor farmer, he has several competitive advantages. Since he can manipulate the growing conditions of his plants, including temperature, light, and water input, he can grow specific varieties his competitors cannot. It's also easier for him to run a trial of many varieties for chefs to test, or to manipulate a specific variety's taste, shape, or color to suit the needs of his clients. However, he's struggled to compete in the retail market. While the quality of his lettuce is quite high, the costs of production are also relatively high. Nonetheless, Kakazu indicated that Hawai'i has a high demand for local produce and, while he's uncertain of the exact demand for his specialty products, he said his primary constraint was the size of his operation, which he hoped to expand soon. He also talked about the possibility of extending his business into agro-tourism by offering farm tours at a convenient downtown location and making a small profit on direct sales, but this would also require a larger growing space.

While MetroGrow is a unique operation in Hawai'i, it demonstrates several key features in the local lettuce industry. Kakazu's business model is built around the high value of specialty products. Although MetroGrow's lettuce is grown in Hawai'i, many of the agricultural inputs are imported into the state. Everything from his growing plugs, fertilizer, seeds, and even his growing tubs are imported from the continental US. Because he operates a small business, like most farms in Hawai'i, he cannot take advantage of purchasing items in bulk. However, Kakazu saves on cost by spraying the roots of his plants, instead of submerging them in water, a practice known as aeroponics, which greatly reduces the amount of growing solution he requires.

MetroGrow's business model also differs from the standard lettuce growing operation in Hawai'i in several ways. For one, Kerry Kakazu's goals differ from those of many other farmers. While he mentioned during our interview that the food security and sustainability goals of Hawai'i are something he takes seriously, his business is primarily focused on selling boutique products and has little impact at the state level, instead capitalizing on the premium value of niche markets. By contrast, Jason Brand, the founder of Kunia Country Farms and producer of hydroponically grown lettuce, among other fruits and vegetables, said in an interview with Think-

Tech Hawaii that his mission from the beginning was to help make Hawai'i food independent. His business model is based on producing lettuces which are "fresh, local, sustainable, and cheaper" than imported lettuces (Brand, 2016). Brand also supplies larger, local restaurant chains, like Zippy's, so he has a strong incentive to out-compete mainland lettuce growers.

Additionally, consumers purchase lettuce for a variety of different reasons. In the case of MetroGrow's lettuce, consumers pay a premium price for a high-value, specially grown product, typically sold in a restaurant. In this sense, they're paying for a "luxury good" tailored to the requirements of a highly talented chef. In addition, they are paying to experience eating at a restaurant and the atmosphere it provides. However, a consumer purchasing lettuce from Kunia Country Farms, either at a farmer's market or at one of their retail outlets, may still be buying a leafy lettuce (as opposed to a head lettuce), but is purchasing a relatively inexpensive product as part of a nutritional or dietary preference. The purchase has far less to do with the high-value or uniqueness of the product and is more likely a result of its price and the consumer's attitudes toward lettuce as a food product and a preference for locally grown food. However, if a consumer is making a purchasing choice based only on price, they will undoubtedly choose mainland lettuce, since it benefits from economies of scale and can be sold at a much cheaper price point.

Conclusion

All of this begs the question, what lettuce ends up on your plate and how did it get there? Well, if you purchase your lettuce at a local supermarket or from a chain restaurant, it was likely grown in either California or Arizona by immigrant farmworkers. Roughly half of those heads of lettuce will have been picked by undocumented workers. If you decide to purchase locally grown lettuce at a farmers' market or a locally labeled brand at the supermarket, your lettuce was probably picked by first- or second-generation immigrants to Hawai'i, or by a volunteer worker, likely as an agro-tourist through a program like WWOOF. Finally, if you purchase your lettuce from a high-brand, locally-sourced restaurant, or in a unique salad bag, it's likely to be produced by a small farm growing specialty crops, like MetroGrow, which is the largest and fastest growing sector of the Hawai'i lettuce industry.

Lettuce spans the distance from luxury crop to relatively inexpensive health food. As the highest value vegetable crop in the US, it obviously has a significant place on the American plate. Similarly, lettuce is the top 12th agricultural commodity, and the highest value vegetable commodity in Hawai'i (USDA, 2015). Unlike the mainland US, which profits mostly from head-lettuce, specialty lettuce is both the highest value market and fastest growing lettuce sector in Hawai'i. Additionally, far more acres are dedicated to specialty lettuce in Hawai'i than either head lettuce or Romaine (USDA: HVMCR, 2017). This structure of high-value production is driven by the nature of Hawai'i agriculture, which is primarily made up of small farming operations that cannot compete with the economies of scale from imported lettuce, and instead require a market niche with a price premium.

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