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The role of regional food hubs in Indigenous communities: Wai´anae Food Hub at Kahumana Organic Farms

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Abstract
The concept of community food security and food sustainability has received much emphasis the last two decades especially by urban and regional planners. Food hubs are innovations in local food systems that serve as an alternative to the conventional food distribution system. Hubs help connect small farmers with local markets and increase food access for local resident. This article follows Wai´anae Food Hub, a new food hub startup since 2017 in Lualualei Valley on the Wai´anae Coast of O´ahu. The research was conducted with low-income and part-time food producers that utilize the hub as well as the staff of the hub with a methodology of bottom-up and participatory action research. The article also presents grassroots policy consideration for supporting community-oriented food hubs from a focus group organized with multiple food hubs by the Hawai´i Farmers Union United.

This article illustrates how rural food enterprises such as Wai´anae Food Hub at Kahumana Organic Farms can contribute to improved access of local food and simultaneously reduce rural poverty and encouraging food sovereignty through Hawaiian traditional agriculture practices. This article suggests that planners should pay more attention to food hubs and their potential positive impacts on Indigenous wellbeing. Food hubs have the potential not only to include people who have traditionally been excluded from the food supply chain and to create an income stream for subsistence and backyard producers, but food hubs can also be enterprises that incorporate the cultural strength of Indigenous Peoples to resolve food insecurity issues in their own communities.

Section 1: Introduction and Review

Introduction

The concept of community food security and food sustainability has received much emphasis the last two decades especially by urban and regional planners. Food hubs are innovations in local food systems that serve as an alternative to the conventional food distribution

system. Hubs help connect small farmers with local markets and increase food access for local resident. This article follows Wai´anae Food Hub, a new food hub startup since 2017 in Lualualei Valley on the Wai´anae Coast of O´ahu. The research was conducted with low-income and part-time food producers that utilize the hub as well as the staff of the hub with a methodology of bottom-up and participatory action research. The article also presents grassroots policy consideration for supporting community-oriented food hubs from a focus group organized with multiple food hubs by the Hawai´i Farmers Union United.

This article shows that rural food enterprises such as Wai´anae Food Hub at Kahumana Organic Farms can contribute to improved access of local food and simultaneously reduce rural poverty while encouraging food sovereignty through Hawaiian traditional agriculture practices. This article claims that planners should pay more attention to food hubs and their potential positive impacts on Indigenous wellbeing. Food hubs have the potential not only to include people who have traditionally been excluded from the food supply chain and create an income stream for subsistence and backyard producers, but food hubs can also be enterprises that incorporate the cultural strength of Indigenous Peoples to resolve food insecurity issues in their own communities.

Section one this article familiarizes the reader with several central concepts of local food systems, food hubs, food systems planning and the Wai´anae community. Section two of this article describes the data collection related to the project and suggests that dual roles of researcher and practitioners can be a solution to how deliberative action combined with participatory Indigenous methods can be a model for just representation based on the community's inputs. Section three includes the results, discussion and findings. This section show evidence of how food hubs can be a solution for increased local food production and integrated in the Indigenous economy as well as the more formal capitalist economy. The Wai´anae Food Hub at Kahumana is also referred to as the Wai´anae Hub, the hub, Kahumana, and the Kahumana Farm Hub (KFH) throughout the paper. People's names in the comments are pseudonyms and not growers' real names.

Community food security, food hubs and food systems planning

This article explores the role of food hubs and their potential positive impact on food security and Indigenous wellbeing. A regional food hub enterprise manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional farmers to strengthen their ability to satisfy wholesale, retail, and institutional demands (Barham

et. al, 2010). Food hubs are a component of a community or local food system. Local food systems involve small farmers and short supply chains in which farmers also perform marketing functions, including storage, packaging, transportation, distribution, and advertising (Martinez et. al, 2010). Food hubs are innovations that serve as an alternative to the conventional food distribution system to help connect small farmers with local markets and increase food access for local residents.

The problem faced by small farmers and growers who participate in direct-to-consumer sales was that they faced challenges in increasing their production due to the significant time spent on marketing and distributing their own products (Day-Farnsworth and Morales, 2016). Food hubs became an enterprise that supported farmers who wanted to sell to larger customers such as schools and restaurant and not just in farmers' markets or farm stands. One could argue that food hubs do not fit into the direct-to-consumer logic as they buy products from local farmers and resell it with a markup similar to a broker or intermediary. It is correct to say that food hubs are an intermediary and lose one aspect of direct-to-consumer interface. But because of the high demand for local food from larger buyers, food hubs have now been described as an essential component of scaling-up local food systems and a flagship model of socially conscious business (Colasanti et al., 2018). Food hubs have also been described as "financially viable businesses that demonstrate a significant commitment to place through aggregation and marketing of regional food" (Fischer, Pirog, & Hamm, 2015a, p. 97).

One of the main benefits of a food hub for small farmers is that it can allow for a focal point close to home where they can sell their produce and products. In the local food system and as we will see with the case of the Wai´anae Food Hub, a food hub often results in outcomes such as increased availability of local food, increased availability of quality foods such as organically produced food, more affordable local food, and increased economic viability of small food producers (Day-Farnsworth & Morales, 2016). However, what has not been discussed and is the focus of this article has to do with food hubs ability to include marginalized groups of small farmers and Indigenous food producers in the supply chain who traditionally have no access to sell their fruits or vegetables.

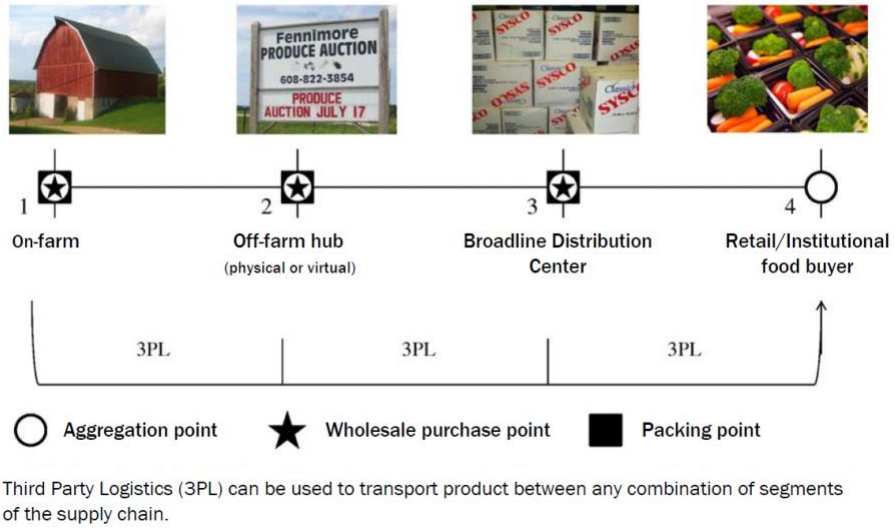

Figure 1: Aggregation Points and Distribution Paths Across Local/ Regional Food Supply Chain from Day (Farnsworth and Morales, 2011)

Planners have reclaimed interest and involvement in local food systems planning over the last twenty years (Pothuckuchi & Kaufmann 1999). While planners used to work on the fringe of farming communities with conservation programs to preserve land resources for agricultural use, they have not been involved with food systems planning for over a half a century in the U.S. (Vitiello & Brinkley 2014). Vitiello and Brinkley (2014) suggest that:

> Food system planning is among the most dynamic ‘‘new’’ directions in planning, though it has yet to tackle some of its oldest problems. Urban agriculture and food projects offer community economic development institutions opportunities to build food and land sovereignty, even as the place of agriculture in cities and suburbs remains ambiguous and debated in many places. (p. 15)

Despite a spike in interest for community food systems, however, planners have been quicker to address residents' access to food e.g. food deserts rather than promoting food producers and sustainable food production. That could be because planners feel more at home in urban areas and not in rural and farming communities or other reasons why planners feel distant from agriculture outlined in Pothuckuchi and Kaufmann (2000). To strengthen community food security, Raja (2014) have suggested that planners ought to ask what can be done about bringing income opportunity to the *right farmers* and good food to the *right people*? In this regard, planners have been better at addressing the latter.

Food Justice for Producers?

This research highlights that current views on food security and justice are dominated by questions of food access and affordability and not by fairness in the marketplace. The former is more of a consumer or "eater" perspective while the latter is more of a farmer or producer perspective. Several influential works have suggested that capitalist or market-oriented developments cannot address the structural injustices in the food systems but rather that capitalist structures is the main cause of injustices (Born & Purcell 2006; Guthman 2004; Guthman 2008; Allen 2010; Alkon & Norgaard 2009; Winter 2003; DuPuis & Goodman 2005). Guthman et al. (2006) suggest that there is a tension between food security and farm security and that food localization tends to favor farmers rather than the poor who suffer from food insecurity. In that discussion, scholars have distinctively separated people who suffer from food insecurity (consumers who lack access or cannot afford food) from farmers. In reality, rural and farming communities suffer from higher rates of food insecurity but Guthman et. al.'s (2006) argument exclude that possibility by their way of conceptualizing the problem.

Local food movements have been more producer oriented in South and Central American and other developing countries. Escobar (2001) is a strong advocate for human rights and localism in South America and he argues that social movements in agriculture have a twofold commitment: 1) to the preservation of ecological diversity and integrity, and 2) to the renewal of local economies and communities (Escobar, 2001). Escobar (2001) develops a human rights component to localization and social movements theory as the re-creation of space through localization, place-making, resistance to colonialism and neocolonialism in international relations. Other scholars argue that Central America's rich and violent political history has meant that activists once involved in movements for social change are still around, many of them are in NGOs working for sustainable agriculture (Holtz-Gimenez, 2001). Holtz- Gimenez (2001) illustrates the importance of farmers' bottom-up movements for developing sustainable agriculture. He argues that perhaps the most pressing lesson is simply that agriculture in general will change not only when farmers change, but when farmers and their allies are capable of changing the institutions that prevent change (Holtz-Gimenez, 2001). This last view echoes Bookchin's understands sustainable agriculture as part of a way of life in which both humans and their natural surroundings can live free from dependence on dominating institutions and practices (Desjardins, 2012). To Bookchin, sustainable agriculture reinforces a lifestyle in which local communities become sustainable and

self-sufficient. Fundamental change meant that humans had to be free from of all forms of external control and domination to pursue fully conscious self-determining activity: the form of community where humans experience true freedom, is the only type of community where humans can live in harmony with their natural surroundings (Bookchin, 1995). Along those lines, Hamm and Bellows (2003) define community food security as a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice.

History of Economic Developments on the Wai´anae Coast

Leeward O´ahu or the Wai´anae Coast is a special place where pockets of traditions still exist. In Wai´anae, people feel a traditional sense of independence and a refusal to conform. That may be explained by the geographical isolation of the Wai´anae mountain range— a majestic wall that separates Wai´anae from the rest of O´ahu (McGranth and Brewer, 1973). The history of the Wai´anae Coast depicts a place where people did not only survive but also thrive off the bountiful land.

Wai´anae is also known for being a place of refuge, healing and rebellion against new influences. In the late 1700s, Maui chiefs attacked O´ahu and the remaining resistance regrouped on the Wai´anae Coast (McGranth and Brewer, 1973). Moreover, when Kamehameha invaded O´ahu, the isolated coast of Wai´anae became a refugee for opponents of a new order and when waves of missionaries spread the ten commandments in Hawai´i, Wai´anae residents held on to their Indigenous religion and rebelled against the changes for a long time. Additionally, in 1893 when Americans kidnapped Queen Liliuokalani and invaded Hawai´i, Wai´anae residents plotted the resistance (McGranth and Brewer, 1973).

In 1880s, the population of Wai´anae was 500. A sugar plantation brought more economic development to the coast and more money, people, a railway, a hydro-electric plant and continued tensions between the old and the new. In 1890, the Sugar plantation had 600 acres in cultivation and produced 2,500 tons of sugar, which employed 350 people (McGranth and Brewer, 1973). The plantation also brought multiple ethnicities of people who eventually became Wai´anae resident such as Portuguese, Japanese, Filipino, Chinese, and Hawaiian. Early Hawaiian settlers used the term Ahupua´a for segments of land that stretched from mountain to sea and provided all the resources for people lives (McGranth and Brewer, 1973). Makaha had a resurgence of the ahupua´a

concept under the leadership of James Robinson Holt II or Kimo as the Hawaiians knew him. He kept horses, sheep, cattle, pigs and dairy for milk. Kimo grew rice next to the taro, watermelons, pumpkins, tomatoes, alfaalfa, millet, sorghum, bananas, coffee, sugar, in the uplands. Kimo's ranch consisted of 15 Hawaiian cowboys, 6 Portuguese dairy hands, 12 Chinese people who worked the taro patches and fed that pigs, and 28 Japanese people who tended the coffee orchard lives (McGranth and Brewer, 1973).

At the turn of the 20th Century, Dillingham developed the Wai´anae extension of his railway and for the first time, Honolulu residents became aware of the vast "new frontier" of Wai´anae. The Advertiser journalist started writing about the idea of developing lands in Wai´anae to supply Honolulu with fruits and farm produce (McGranth and Brewer, 1973). In 1929, the U.S. government bought 4,000 acres in Lualualei to built a naval ammunition depot. In the 1930s, only 200 people lived in Wai´anae. After the Pearl Harbor bombing, the military took over more lands on the coast and Makua Valley and Wai´anae people were displaced and received token payments for their lands. Plantation workers and farmers became soldiers. As many as 15,000 to 20,000 soldiers lived in Wai´anae.

Chin Ho bought the plantation lands and sold them off in smaller farm lots to a new population of people who started moving into Wai´anae in the 50s. Ho had told the local newspaper that a basic need of every human is land of his own (McGranth and Brewer, 1973). It led to a boom in population and new residents, some who made inexpensive renovations to the existing Quonset huts left by the military. A 1950 census stated the population to be 7,024. However, water right problems remained as they had done during the sugar plantation time and this time between Ho and the City of Honolulu. New residents started demanding new bank offices, a new fire and police station, a new high school, and more water. By 1960, the population of Wai´anae was 16,452. Jobs were opening up in Ewa and the newly built Campbell industrial park in Kapolei. As Wai´anae was booming, Ho announced that he wanted to make Makaha into a new Waikiki. Again, resistance and rebellion started growing among the Wai´anae residents over the new developments.

Old town resident started complaining about the rate of crime in Wai´anae, which they contributed to the low incomes of many Wai´anae residents and the lack of job opportunities that led to pilfering (McGranth and Brewer, 1973). Lack of money was nothing new on the Wai´anae residents and was never an embarrassment. Each family took care of its own. With fishing, and a little homegrown food, people were self-sufficient, and no one ever needed to starve. At that time,

40 percent of residents were Hawaiian or part Hawaiian, many were Filipino, Samoan and Japanese, and 32 percent were haole or white. Anthropologist Alan Howard's observations suggested that people from Wai'anae preferred cooperative work such as putting on a luau. In many homes, children learned by watching rather than from books. Students did well when working in groups and poorly when put it against one another (McGranth & Brewer, 1973). Howard argued that Wai´anae has a rich and warm human culture not better or worse than any other group and his central point was to say that having everybody be alike is undesirable (McGranth & Brewer, 1973).

In 1970, the population had grown to 24,077. Today, the Wai´anae Coast has a population of 54,505 (US Census, 2010). While the health of people in Hawai´i ranks very high when compared to the of the U.S., people in Wai´anae face a disproportionate burden. The following describes the communities of Nanakuli and Wai´anae (UH Manoa, 2003):

> The percentage of unemployed persons is more than double the State average, and the per capita income is the second lowest in the State. Almost half of the families here receive food stamps; the area is ranked fourth-highest in the State for Temporary Assistance to Needy Families (TANF) recipients. Almost 70% of the adolescents from this community who responded to a Statewide student survey reported neighborhood problems with fighting, graffiti, and crimes. Child abuse rates are high, and teachers' and parents' reports of school safety are among the highest in the State. Third-graders do poorly on their SAT tests, and fewer adults in this community have a high school diploma or college degree than in most other communities.

Economic poverty rates are higher in Wai´anae, compared to the rest of Hawai´i (Gill, 2019). Food insecurity is well documented on the Wai´anae Coast. The exorbitant price of food and cost of living on Oahu only compounds the issue of food insecurity (Kent, 2016). In Wai´anae, 33% of people live in households that are considered food insecure and, among ethnicities, Indigenous Hawaiian families have the lowest average family income (Baker et. Al., 2001).

Waianae Health Demographic Disparities

	Waianae	State
Native Hawaiian population	59%	21%
Population aged 5-24 years	42%	32%
Obesity	41%	22%
Diabetes	15%	10%
Households receiving SNAP	33%	12%
Under 100% federal poverty level	24%	11%
Overall mortality rate	946	592

Table: Carlie Procell/Civil Beat
• Source: State of Hawaii Primary Care Needs Assessment Data Book 2016- and 2010 US Dept of Commerce, US Census Bureau • Get the data
• Created with Datawrapper

Figure 2: Wai´anae Health Demographic Disparities (Gill, 2019)

Section 2: Research Approach and Methods

Research Approach and Methods of Community Participatory Research

Local government engagement in community food systems has sometimes been led by leaders who play dual role of scholars and practitioners and it is an innovation used by other sustainable development researchers (Raja et al, 2018). This research gains some of its strong points from the principal author's hybrid research and practical involvement. The author was a PhD candidate with University of Hawai´i at Manoa simultaneously as he was chosen to open the Wai´anae Food Hub at Kahumana and the elected by small farmers as the Policy Committee Chair with Hawai´i Farmers Union United. Moreover, hybrid roles of researcher being a community activist has been highlighted in Indigenous Hawaiian research methods (Kahakalau, 2019). The hub was not a research intervention, rather the author was selected as the person to launch the food hub project and conduct research simultaneously. The data was collected through three different stages of the hub project that will be further detailed below: 1) The Wai´anae operational statistics; 2) the University of Hawai´i at West Oahu Imi Na´auao Project; and 3) Food hub focus group with Hawai´i Farmers Union United. Different stages and types of data collection can produce strong

conclusions when components of both quantitative and qualitative results can be compared and triangulated. Triangulation means to collect information from a diverse range of individuals and settings using a variety of methods and it reduces the risk of systematic biases that derives from using only one method (Maxwell, 2013).

With a commitment to place-based learning and social justice, Ma´awe Pono is a research methodology suitable for community participatory research in Hawai´i and for Hawai´i (Kahakalau, 2017). Central to the methods used in this research is the notion discussed by Young (2019) which suggests that deficit thinking, and deficit models have tended to overlook the power of Indigenous people resilience as well as the capacity of Indigenous people to govern their own affairs and natural resources. An important argument for dialectic research methods such as "*talk story*" (informal and relaxed conversation) in Hawai´i has to do with the fact that it is the most preferred method by these communities (Kahakalau, 2019).

Partly inspired by Participatory Action Research (PAR), Dr. Ku Kahakalau established the Ma´awe Pono methodology. Ma´awe Pono, in a sense, is a deepening of PAR method and included a greater commitment to place-based knowledge about Hawai´i and its people. Ma´awe Pono guided the researcher to more fairly represent the Wai´anae population and to conduct research in ways that Hawaiian communities are comfortable with (Kahakalau, 2019). In this study, the researchers take the roles as facilitators and the people who have participated in this study are considered the topic experts and co-researchers. Individual listening sessions, farm visits, and "talk story" with farmers allowed a dialectic relationship between researcher and the research population to be developed. Within the scope of participatory and community-oriented research, Ma´awae Pono allowed the researcher to deepen trust and rapport with communities especially in the work with the hub and research of Imi Na´auao project. That is partly because the person who extensively promoted Ma´awe Pono herself mentored the scholars and practitioners during the Imi Na´auao project including the hub manager.

Kahakalau (2017) suggests that Ma´awe Pono believes in nonlinear research for Hawaiians, by Hawaiians, using Hawaiian methods of data collection, analysis and presentation. Moreover, "Ma´awe Pono is accountable to Hawaiian values, our culture, our communities and future generations" (Kahakalau 2017, p.5). Ma´awe Pono also includes a strong heuristic element, similar to planning research methodology (Raja et al, 2018), in that it involves the researchers on a personal level, includes intuitive judgment, a spiritual dimension and relies on common sense—

a shared Indigenous practice (Kahakalau, 2017). Furthermore, Ma´awe Pono utilizes both quantitative and qualitative data, gathered from multiple groups of co-researchers, in this case, Hawaiian language students, teachers, parents and community members, who shared their thoughts.

The Wai´anae Food Hub's operational statistics. As the Wai´anae Hub was funded by a USDA grant, grant administration required some collection of data relevant to the project. The data included numbers on sales in dollars and pounds and also operational expenses that included payments made to suppliers and labor hours involved. For the initial grant, a needs assessment was done with growers to identify members needs for technical skills, inputs, and equipment. While the needs assessment was done once, the collection of data on sales and expenses has been ongoing since the start of the project.

The University of Hawai´i at West O´ahu Imi Na´auao Project. A parallel research project with the University of Hawai´i at West O´ahu (UHWO) called Imi Na´auao- Hawaiian knowing and wellbeing, started in the August 2017. The Wai´anae Hub portion of Imi Na´auao research examined the relationship between culturally centered economic development and Indigenous Hawaiian wellbeing. The team was tasked to identify solutions for improving economic wellbeing by supporting ´āina (land) based practices. The research project was approved by the IRB of University of Hawai´i system (Protocol 2017-00647). The team explored economic opportunity possibilities through the Wai´anae Hub at Kahumana as a nearby resource in order to highlight both existing community assets and regional growers´ needs. Designed to highlight agricultural abundance in Wai´anae, rather than focus on existing socioeconomic disparity, research also incorporated Ma´awe Pono, the guiding methodological and theoretical framework for the larger Imi Na´auao project.

Talking story took precedence over formal interview. The interviews included stories of place, land use, needs, assets, and water. Interviews were conducted with seven hub members. Interviews lasted for 30 to 45 minutes with each grower. All interviews were transcribed and coded into themes. The people interviewed were anonymous and are not referred to by their real name in the findings. Once the whole transcript document was coded, we would add them to a spreadsheet matrix with coding categories in one vertical column and person interviewed on the horizontal column. A survey was conducted with growers to collect more demographic information and understand members' relationship with the food hub. The survey was conducted using online

software Qualtrics and survey reports were produced through the website. A total of twenty-seven hub members responded and most of them administered in person by hub manager and later typed into the Qualtrics. Moreover, 40 co-participant observation/ field-notes by primary author/ hub manager helped every step of the way because they are essentially self-reflection notes on hub manager role and potential for making the hub a solution for a range of community challenges. A total of 40 field-notes from the period of September 2017 and March 2018 made up one hundred pages single-spaced in a word document when combined.

Wai´anae hub farmers include several types of food growers: 1) retired or kupuna farmers, 2) backyard and part-time growers, 3) educational farmers, 4) yard workers/ landscapers, and 5) landowners with fruit trees. The hub's customers are also beneficiaries. Some of the people working for Kahumana's farm crew are also farm hub members and use their time off work to grow fruits and vegetables that they sell to the hub. Seven people interviewed in this study included one kupuna farmer who grows squash, bananas, and pomelo; three land owners with fruit tree orchard on their farms; one person who receives fruits in exchange for helping land owners with yard work; one employee at Kahumana who farms on two separate locations on the weekends connected to land owned by his Church; a one more employee at Kahumana receives fruits in exchange for helping land owners with yard work.

Food Hub Focus Group with Hawai´i Farmers Union United. The third stage of data collection was from participant observations and policy proceedings from a food hub focus group. The group included five of the major food hub leaders in Hawai´i including Adaptations, Farm Link Hawai´i, the Wai´anae Food Hub, the Kohala Food Hub, and Hawai´i Ulu Cooperative The principal author was the facilitator in of the group in his official role of the HFUU Policy Committee Chair. HFUU is a division of the National Farmers Union (NFU), which represents over 200,000 family farmers, fishers and ranchers in organized divisions in 33 states. The key to the success and credibility of NFU has been the union's grassroots structure in which policy positions are initiated locally (NFU, 2019). The policy process includes the presentation of resolutions by individuals, followed by possible adoption of the resolutions at the local, state and national levels. In 2019, the first author represented Hawai'i´s farmers in the Policy Committee of the National Farmers Union (NFU). Being a member of 2019 NFU Policy Committee and HFUU policy chair supported the objectives of the study in a few different ways. From relationship building with the other members of the NFU policy committee, who all operated family farms in

the U.S. continent, the author was able to better grasp the difference between needs and priorities in Hawai´i and on the U.S. continent. Some of them operated direct-to-consumer organic operations while others were large conventional farmers. Primarily, the author learned the process of deliberations using a bottom-up participatory model that democratically produced the union's Policy Statement (general needs), and Special Orders of Business (priorities) that can be found on the NFU website.

Section 3: Results, Discussion, and Conclusion

Growing Abundance in Wai´anae homes

As discussed above, people in Wai´anae always placed a high value on absolute freedom. Growing food for the family and to share with friends was historically a central pathway to experience such freedom (McGranth & Brewer, 1973). The Poe family in Wai´anae has over a century of history of growing taro to improve conditions for their family (McGranth & Brewer, 1973). Growing food as a strategy toward freedom aligns with Bookchin's (1995) notion of sustainable agriculture where humans had to be free from of all forms of external control and domination to pursue fully conscious self-determining activity.

In the last forty years, the Wai´anae Coast has become quite the hotspot for activism movements that applies traditional solutions to modern concerns. Perhaps not surprising given the history of water disputes in the valley, activist such as Eric Enos and Ka´ala Farms in Wai´anae have established a cultural Hawaiian farm as a place of healing where they teach traditional agriculture and the water flows from the mountain through many taro patches and vegetable gardens to the sea. The mission of Ka´ala Farm located on the Wai´anae Coast is to reclaim and preserve the living culture of the Po‘e Kahiko (people of old) in order to strengthen the kinship relationships between the ´āina (land, that which nourishes) and all forms of life necessary to sustain the balance of life on these vulnerable islands (Ka´ala Farm Inc., 2020).

Today, another social justice project that utilizes Wai´anae's ancestral and cultural strengths is MA´O Farms. In 2001, the Wai‘anae Community Re-Development Corporation (WCRC) was established by community members to grow two of our greatest assets: the rich, food producing traditions of the region and youth who were not achieving their academic potential. WCRC aka MA´O Organic Farms has become a national model of a comprehensive effort to revive a just, healthy, sustainable and resilient community food system within an urban-rural context

(Ma´o Farms, 2020). A UH Manoa study of MA´O organic farms, Hawai´i's largest organic farm non-profit with a central educational mission to educate youth, shows the positive effect of people's diets directly related to people working on organic farms (University of Hawai´i, 2019).

Image 1: Photo Credit: Civil Beat/ Cory Lum

Kukui Maunakea-Forth, executive director of MA´O Farms, is a modern-day representation of activism that has a long history on the Wai´anae Coast. MA´O farms operates an organic farm and empowerment programs for youth leaders partly by teaching ancestral wisdom and cultural strengths rooted in Hawaiian place-based traditions.

Comments from growers who sell their products to the Wai´anae Food Hub shows that the traditional ways of growing and sharing food is very much flourishing today. Wai´anae as a sense of place is a place where people grow food for their own families and to share with others. For example, several growers describe how the traditional Wai´anae character of "talk story" and helping others is part of the different feeling of living in Wai´anae compared to other places on O´ahu that have been overtaken by tourism. Kawika Alikai, a farmer in Lualualei Valley reflects on growing up in Kailua in the 1980s:

> I'm not from Wai´anae originally, but from Kailua umm our family comes from Maui. But you know one thing I love about Wai´anae is that it's what Kailua was when I was growing up. You can go down da store and you see one Auntie or Uncle and everybody more open to helping, talk story and dat kinda stuff… (farmer interviews)

The Wai´anae hub project is located in a community with a culture and history of reciprocal sharing. Many people grow food for subsistence, which is a sign of the Indigenous Hawaiian

culture. In fact, without the historical and cultural strength of Wai´anae and its residents as food producers this project would not be so successful. Farmers in Wai´anae grow a variety of fruits, vegetables, meat, poultry and keep bees for honey. Several farmers with the hub commented about growing food to be self-reliant and to share with others in the community. Farmer Emma describes her backyard:

> …about 15 mango trees, avocados, and all kine. All kine. Grapefruit trees, orange, macadamia nut…And I have tangerines. And I have grapefruit that you buy a lot. And I have this uh peach pear. But I don't know what it's called, and I have a lot of that purple fruit [star apple]... And I got that um orange egg yolk [egg fruit] and it's growing in the back…Chico [sapodilla]...sour sap… jabong [pomelo]…4 or 5 different variety of mango…Bees. I have bees and the guy who used to live there never harvest the honey. (farmer interviews)

Farmer Auntie Lani explains how she used to give away the extra food she grew:

> When we started this, when we bought the property back in 84, and we started farming we never really sold what we grew. It went to the neighbors and families… we use to go up the road and just give the neighbors around here...and umm there was one single guy that lived across from us, he did a little bit of farming but mainly for his own. So whatever we grew, we just gave the neighbors. (farmer interviews)

While farmers and backyard growers make up the hub's core members, Wai´anae hub also works with people who are not directly food growers, but they help their elders and people who work full-time to clean their backyards in return for sharing some of the backyard bounty. Farmer Roger talks about his arrangement at a nearby mango farm:

> Some like my friend Chris on the mango farm did it himself all these years till one day I walk up to the farm and said wow this nice place but then that bush gotta come down and that vine gotta come down. All that things blocking the view… But then I told him I like to come back… and he said oh yeah come, come anytime. And then one day went to his place and said look Chris you know who I am already bruh, I going help you out and he looked at me wah huh. Look Chris im not asking you for money im not asking for you to pay me asking you for pay me like how you did for everybody. I going help you out okay, I got plenty of free time on my hands I cannot walk out again knowing the fact that umm this place going still look the same you know. How's about you give me the chance to cut down this whole place and he said shootz go for it. Eh they thought I was joking…yeah they was like wow and I mean I'm proud of what I did but I don't go around telling people I did that I did that, no no, then it would be for nothing, why I do it and brag about it you know I do it because I like it, I do it because that's the way I've been taught you know that's the way my grandparents raised me you know oh yeah… (farmer interviews)

This kind of arrangement of gifting one's time without expecting an immediate return is a sign of Indigenous culture as people share in both the work and bounty. For example, Ekins (2004) calls this type of arrangement "the living economy" or sharing culture, which is different from a barter economy or a market economy, where goods and services are primarily explicitly exchanged for value received.

Accessing new markets through the Wai´anae Food Hub perpetuates sharing food the way that people did historically in Wai´anae and reduces food waste in people's backyards

From the beginning of launching the Wai´anae Hub, the results were above expectation because more growers participated in the hub than initially expected bringing more pounds and earning more dollars. Much of that success can be attributed to the fact that the project is located in a community that has a long history of mutual sharing and living with aloha (love, compassion, caring). The hub is a solution that promote both food security and Indigenous Hawaiian cultural wellbeing because it facilitates marketing on behalf of many cultural practitioners who grow more food than they consume. The hub was strengthened by the historical and cultural advantage of people in Wai´anae who grow food and the hub intentionally established low barriers to entry to be inclusive so that anyone who wanted could participate. Growers that sold their products to the Wai´anae hub were able to utilize the hub while maintaining their livelihoods and their multiple other jobs and activities. Kawika shares how he thinks the hub is part of the solution for small farmers in Wai´anae who do not produce enough every day to work with the large distribution companies:

> …I do know it's a resource that could help me, would help me and is helping me cuz I could go pick my Ulu filled tree and make eighty dollars, that's something that was unheard of for a very long time in Wai´anae because we did not have a Hub. You had to have Armstrong come in here and the only way Armstrong would come in here is, you would produce a certain amount every day…other than that, small little truck farms would have to drive down to Chinatown or other small markets and sell their stuff and now I can go right up the road and save myself twenty dollars in gas. (farmer interviews)

There are several comments about the food hub being a solution to preventing backyard waste, a source of extra income while working full-time in other places and being a resource for growers who are excluded from the conventional supply chain. For example, the following comments from Margie and Roger validates the finding that the hub can reduce food waste and that reducing waste is a value of people in Wai´anae who grow food:

> Researcher: "Do you guys do anything special with your citrus?"
>
> Margie: "Um no not really, I just found out about this farm about selling because it was going to waste… I lived here over 30 something odd years and I never know had the farm down here Hub." (farmer interviews)
>
> Roger: "Beautiful place and that's when I first went into that farm and yeah and you know me I cannot see something nice, something good and helpful and you know go to a waste you know." (farmer interviews)

Understanding the "hidden" contributions of backyard growers in local food production

Local sales are a form of alternative or niche market for many farmers on the U.S. continent and for the industry at large (USDA 2017). By contrast, roughly 33% of Hawai´i's farmers produce food for local consumption (USDA 2016a; USDA 2017). In 2017, local sales reached $152.4 million of which $27.9 was direct farmer to consumer marketing and $124.5 million sold to retail markets, institutions, and food hubs (USDA 2016a; USDA 2017). Hawai´i's local food industry is growing rapidly and posing some hope for Hawai´i to enhance food security and self-reliance. Several researchers have highlighted the contributions of home growers in Hawai´i . H.C. Bittenbender (1993) writes:

> MIFF stands for multiple income farm family. By that I mean that both the husband and wife both have major sources of income like jobs or pensions and the farm is a third source of income. The farm is not the dominate money maker in their life, but it is an important part of the family strategy. (p. 1)

Bittenbender (1993) suggest that MIFFS are the silent majority of diversified agricultural farmers in Hawai´i on the U.S. continent. In Hawai´i, about 95% of all farmers earned less than $250,000 per year classifying most farmers as small-scale operators (USDA, 2017). Confirming Bittenbender's research, Lincoln and Ardoin's (2015) research provide a description for "subsistence" type of farmers:

> ...also described as 'traditional farmers' or 'hippy farmers, [these farmers] prioritize growing food to feed themselves, their family and friends, and the community. These farmers consume, trade, or give away the majority of their agricultural goods. They tend not to engage much in classic economic pathways and also tend to need outside income to support their farming lifestyle. (p. 571)

Comment's from growers with the Wai´anae hub also who how these growers align with the notion of MIFFs and traditional farming. For example, Auntie Lani shares the story of her joining the hub:

> …and then I found out that I was the first, so he said, of those kind of farmers, the backyard farmers. Which is good cuz it made it easier for me… umm we're partial to growing squash and bananas because for us the maintenance is easier...last year we had so much squash I didn't know what to do with it... Right now we have it on a schedule system for water. So it's an automatic thing that goes on every night so that makes it easier. We didn't want to get too into it because then we don't have a life. (farmer interviews)

Auntie Lani's comments about wanting to grow the kinds of food that allow them to "*have a life*" allude to the other activities that take time in people's life. Other farmers have made similar comments about the importance of other activities and sometimes other jobs they might do. For example, Emma says she farms part-time because she has a full-time job:

> Imma housekeeper. I clean house, that's what I do. Yeah. I used to be a caregiver. I was a certified caregiver. But then, you have to go every year to um...get your-get your test and get certified again. I think that was kinda too much for me. You know, housekeeping...you don't need to do that. (farmer interviews)

Nevertheless, hub growers are not only engaging in multiple income activities, they also have other important family related duties that are cultural by nature. In fact, in the Hawaiian culture, the idea of spending all of one's time on one activity such as farming is not popular. Instead, being a grower is part of what it means to be a Hawaiian person along with taking care of grandchildren. Farmer Margie explains:

> Yeah, but I gotta be home by a certain time. Water the plants, feed the animals you know. And I'm like that's a challenge already. I already gotta cut myself from what I'm doing. Then I got my grandkids which I gotta try help you know… all four days I got three of them, then the rest of the days I got one of them, because the other ones go back to the dad yeah. Yeah it is a really challenging day all day everyday. So I tell myself, when I'm gonna have my own time out. So this is like my time out you know when I pick the fruits and I just go come here [to Hub]. Cause it's like a peace of mind. (farmer interviews)

Many Indigenous farmers do not look at themselves as farmers. If we as a society ignore them, we also fail to understand who our food providers are, and we accidentally exclude them. We strip Hawai´i's people of the human integrity to contribute to the society because food production was something that people in Hawai´i always had to do to survive and sustain their civilization. This is especially true for Indigenous Hawaiian people who grow food for themselves and to share with

other. Growing food is not a specialization done by some people called farmers but rather food security was an activity toward which all people contributed. This became clear from one of the comments made by a Kupuna grower that the first author assisted at her house in Makaha directly after an Imi Na´auao research meeting at UHWO. In February 2018, the author wrote:

> One day, after harvesting her mango, lemons and calamansi limes , I asked one of our Kupuna Auntie farmers: "do you think of yourself as a farmer?" She said "oh no, this is just what we do…" Auntie told me that she has been doing this since she was a little girl with her family that raised cattle in Hilo. She harvests and shares the fruit with me and I, in turn, share it with our many communities that purchase locally grown food in Hawai´i. (2/1/18 field-note)

A survey was conducted with the hub members in the September and October 2017. Twenty-seven members responded to the survey questions. Eighteen people estimated their income from the Wai´anae Hub; the average weekly income totaled $410.00 ($4,920 annual) with the lowest $38.00 and the highest $1,500.00. When asked what makes them the most money, most survey respondents said mangoes, but other common answers included grapefruit, breadfruit, jabong or pomelo (a large variety of grapefruit), banana, lemons and tangerines.

Image 2: Bruce Asato Honolulu Star advertiser (Photo credit)

Kahumana Organic Farms food hub manager, at right, accepts Noble Pilialoha and Darlene Hodges' 250 pounds of jabong (pomelo).

Image 3: Bruce Asato Honolulu Staradvertiser (Photo credit)

Raychel Watkins of Happyponics brings chicken and duck eggs from her nearby farm.

The Wai´anae Food Hub Grows the Local Food Economy and Reduces Food Insecurity for Growers Involved by Creating Culturally Appropriate Economic Opportunity

A community-oriented food hub is a solution for planners who want to improve access to local food without necessarily engaging in the long process of raising new farmers. That is because the hub aggregates from existing food resources that is being left out by the conventional supply chain . Since its start, the Wai´anae Food Hub at Kahumana facilitated more sales than originally expected from the grant proposal. The first year the hub paid $96,325 to its members for their produce, brought about 74,300 pounds of food to the marketplace, and added $128,499 to the non-profit's revenue stream. The majority of food sold included fruits such as mangoes, avocados, oranges, tangerines, lemons, pumelo, breadfruit, and other fruits that grow in Wai´anae.

In 2018, the hub gained more members and reached its 2017 supply of 90,000lbs by August. Mangoes outweighed all other crops by far with a total of 40,000lbs for the year mainly in the months of May, June and July. The hub supplied more mango than one interisland supermarket chain could purchase and had to use all its markets to move the neighborhood grown mangoes. Currently, the hub has approximately 100 participating grower ohana's or families. In the first year, over 90% of members were socially disadvantaged and beginning farmers based on USDA description. In addition, many of the farmers received SNAP benefits; as a result, some of the payments made by the hub was going to people who also suffered from food insecurity. By the second year, the hub had facilitated the sale of over 200,000 pound of majority fruits to farmers markets, community supported agriculture, grocery stores, cafes and restaurants.

Figure 3: Wai´anae Food Hub at Hub Sales in 2 Years

A community-oriented food hub is also a solution for many food establishments who need a more constant supply of local food such as restaurants hotels, cafes and grocery stores. These establishments might want to support as many local farmers as possible but cannot practically have a relationship with each of them. Consistent supplies of local food are also a solution for farmers' markets operators who are often challenged with irregular supply of farmers and local foods (Farnsworth & Morales, 2011). A food hub is an intermediary, yet most growers appreciate the hub's service because it is a quick stop for them to drop-off their fruits and then go about the many other things that they want to do. But some growers would like to do more direct-to-customer marketing to gain the full market price of the food they grow. The mission of the Wai´anae Hub is to connect local growers to local markets. In some cases, growers expressed an interest to connect directly with the customer than the hub manager would facilitate that to eliminate the need for hub in the middle. January 18th, 2018 the manager wrote a field-note:

> While I have been part of setting up market connections for rural growers, the end goal is always to work myself out of a job, to effectively teach my skills to the community so that they can perform the work they want themselves. In the Wai´anae Hub, people come to me with something they have grown and harvested and I inspect it and send it on to the customer. When the grower has learned what quality the customer expects and the communication required for the exchange, I will often try to have the grower break-away

> on its own so it doesn't have to rely on me as a middleman and thus make the whole food dollar, in line with the local food logic for farmers of direct sale to final consumer. (1/18/18 field-note)

During the first two years, the hub assisted three growers to do more direct connections; one ended up coming back to the hub because they did not want to deal with the communication. It is by understanding the preferences of wholesale customers that the hub can complete its mission on behalf of the growers. This is reflected in a field-note the manager was visited by grocery store customers in Oct 24, 2017:

> Peter from Down To Earth brought his entire team of buyers from the island to Kahumana...In the group there were three buyers who had worked for 40 years in the industry not only with Down To Earth but also with the local grocery stores Foodland and Times Supermarket…from the store's perspective they are not [only] interested about how we make social changes in our society but rather they want to know about food quality and traceability…they were very happy with Kahumana and they especially like the way that we communicate with them. They shared some of their experience from the floor. They said that when they are working they don't have time even to check their emails or to sit down for that matter. They said the best way local farms can work with them is by calling them and checking in with them every week and that is what we have been doing at Kahumana. They couldn't talk enough to the point of people falling off the chart as they call it. They would get these new farmers who just who would start to deliver to them and then just nothing not contact them basically fall off the map. The consistency they said at which a farmer can deliver to the store is important and while they understand the effects of seasonal changes and their customers do too they still said that some people do have no sense of consistency. And it's not just for them about consistency but communication of what is to come and what is not to come. They appreciate a farmer much more who can call and say "sorry this will not be coming in this week" instead of not calling at all because it gives them a chance to order the fruit or vegetable from another source. (10/24/17 field-note)

This comment helps explain how farmers can maintain standing orders with the biggest buyer of local foods- the grocery stores. A standing order helps the hub because it is a standing opportunity for growers to make an income every week. As the administrator of those orders, the Wai´anae hub manager has to constantly communicate with the growers on a day to day basis to keep the orders. That is perhaps a good explanation of the role as the manager because the growers themselves do not want to handle standing orders while customers usually prefer that type of continuity. In January 12, 2018, the manager reflected on standing orders in a field-note:

> Another crop that was growing in abundance and not being ordered was Jabong aka Pomelo. I remember back in August after mango season my supervisor asked me what we will focus on now that the mango season is over. I said let's try to move 500lbs of pomelo

> every week. We got a standing order with Foodland for 300lbs per week, and they have been ordering that weekly since September. It has benefitted lot of community members who otherwise see their pomelo waste. (1/12/18 field-note)

For customers the price point of the standing order is important. Once the hub can find out what customers are willing to pay, it checks-in with the growers to see if an agreement can be made. At times, the manager has to do some extra negotiations on behalf of the growers to receive a larger share. The experience of the Wai´anae Food Hub at Kahumana reflects issues faced by individual growers and solution of food hubs similar to Day-Farnsworth and Morales (2011) who argued direct-to-consumer marketing by farmers is not able to satiate demand for larger customers in the local food system. Day-Farnsworth and Morales (2011, p. 231-232) said that "direct marketing is an impractical means of moving high volumes of local product into venues such as retail grocery stores and cafeterias because farm-direct sales typically move small quantities of product, while retail and institutional buyers would prefer to buy larger volumes from fewer suppliers." In the first year, the hub added more than seven new large local buyers including some with multiple store locations such as Whole Foods, Down to Earth, Foodland, and Island Vintage Coffee. The new connections among growers and consumers facilitated by the hub serves as an alternative and can be posed as a counterpoint to concentration of power and ownership by multinational agri-food corporations and supermarket chains who have come to dominate food supply chains (Hendrickson et al., 2001).

Finally, the Wai´anae hub research shows that the enterprise does more than contribute to improving food security by bringing more locally grown food to the marketplace. It also reduces food insecurity for some of the growers involved by creating culturally appropriate economic opportunities for them. Mark work with Kahumana Organic Farms but also participates in the hub on his time off. He reflects on his experience with the hub and how it helps people who suffer from food insecurity:

> …the farm hub gives people that opportunity to sell it, so that's great...this fruit that was going to go to waste …for them they get direct impact in their life right then. They get cash …like this one lady, a couple of the guys down there...were in here with kids one day and it's like "now we can go get rice for dinner". Right? And I was like (breath). Instant impact on their life. For that day. Just things like that...or we're going to go you know out to get some food or um just supplementing whatever their income is even if they don't have any other income...yeah it just gets people more aware of the food insecurity on this island...just because there is so much...so many fruit trees, especially in just this valley. Let alone all

> the other valleys on this part of the Westside...you know where a lot of the fruit just hits the ground, it stays there. (farmer interviews)

Mark's comment shows the impact of having economic opportunity for people who suffer from food insecurity. Earlier, the article reflected on the problems with the modern conceptualization of food insecurity that tends to favor allocation of resources for people who suffer from food insecurity through USDA programs such as SNAP. In reality, rural and farming communities suffer from higher levels of food insecurity, but popular research has not focused on farmers being the poor by their way of conceptualizing the problem (e.g. Guthman et al., 2006).

Two important pieces of evidence can highlight the problem with current conceptualization of food security. First, new research shows that food insecurity rates are higher in rural areas compared to urban (Feeding America, 2019). This article argues that rural food insecurity should be resolved different from food insecurity in urban areas. Second, Fisher's (2017) research suggests that current food insecurity efforts perpetuate hunger rather than reduce it over time. One solution according to Fisher (2017) is to address the economic poverty that causes food insecurity in the first place. When people who suffer from economic poverty can raise their personal income as a result of economic development in their community, they can create the economic freedom that allows them to purchase adequate food for themselves and their families. Mark's comment and the work of the Wai´anae Food Hub confirms Fisher's (2017) assertion that alleviating the economic poverty that causes food insecurity can be an option to resolve food insecurity by raising one's personal income.

Policy Suggestions for Promoting Community-Oriented Food Hubs

Research suggests that the modern-day ancestors of today's Indigenous Hawaiian community resided in the Hawaiian Islands at least as far back as 500 and 700 A.D. During this time and prior to the arrival of Captain Cook in 1778, Indigenous Hawaiians had been 100 percent agriculturally self-sufficient for over a millennium, supporting a population of 800,000 to 1,000,000 people (Stannard, 1989). Today, Hawai´i has a population of 1.4 million people and a 90 percent dependency on imported food. The term "diversified agriculture" was first introduced in Hawai´i when sugar and pineapple industries experienced a decline in the 1950s. To quote Philip "The term diversified agriculture as used in Hawai´i includes all agricultural industries on the Islands other than sugar and pineapple" (1953, preface). The 1970s witnessed the continual decline in plantation size production levels as food imports outpaced locally grown food to meet the

growing tourist demand (State of Hawai´i, 2012b). Since the decline of plantation era agriculture, public policy objectives have transitioned from promoting "any other industry than sugar and pineapple" to promoting "local food grown for local consumption", also known as increased agricultural self-sufficiency, as described in the 2012 Hawai´i Food Security and Self-Sufficiency Strategy (State of Hawai´i, 2012a).

This article shows that community-oriented food hubs can be a solution to many problems and perhaps the overarching effects of such a food hub is that it can be posed as a partial solution for the future of sustainable agriculture in Hawai´i. Food hubs effectively coordinate local supplies and promote ongoing relationships for farmers of all ages and backgrounds. New relationships help everyone in the long- run through endeavors such as political advocacy for small farmers, price negotiations, labor help, collective problem solving, seed exchanges, and increase the friendship circles of everyone. What has been highlighted more recently is that food hubs and their networks of local food producers that they support can play a key role in mobilizing food resources when the conventional supply chain shutdowns such as during the Covid-19 outbreak of 2020 (Curry, 2020).

The hub manager facilitated a focus group with the major food hubs represented that established an Open Letter to the State of Hawai´i published on the farmers unions website in June 2019 (HFUU, 2019). The hubs state that "as Hawai´i State institutions strive to increase procurement of local food, it is imperative that procedures, programs, and infrastructure be developed to enable all of Hawai´i's farmers to participate in this tremendous opportunity" (HFUU, 2019, p. 1). The group of hubs funding means to support critical infrastructure to grow food hubs on every island. Hubs identified several important functions of that funding including:

1. Construction of food safety qualified facilities to include aggregation, washing, minimal processing, packaging, cold storage, and other value-added facilities;
2. Provision of technical assistance to help develop internal capacity to supply state institutions and other markets; and
3. Access to adequate inter-island transportation and distribution facilities that maintain the integrity of the cold-chain and maintain cold between the farm and the customer.

Through the work of the Hawai´i Farmers Union United, the hubs joined and presented a bill for the 2020 legislative session called The Food Hub Pilot Program (Hawai´i State Legislature, 2020).

While all legislative measures were turned down in 2020 because of the Covid-19 Pandemic, the food hub pilot program received all positive testimonies from government departments, institutions, non-profits and the public. Over 200 pages of supportive testimonies have been published and not a single voice against the measure to promote community-oriented food hubs. The food hub concept in Hawai´i seems to be a good consensus builder. Following Covid-19 and 2020 Hawai´i legislative session, food hubs went from being relatively unknown to part of the common solution for the agricultural industry, which can be seen in the discussion with Hawai´i Chair of Agriculture about the Covid-19 response (Viotti, 2020).

Beyond Food Hubs: Water Rates and Access in Wai´anae

However, the hub does not solve all problems facing farmers and backyard growers. Remaining problems include finding labor and paying people to help on the farms, accessing water at agricultural rates, and protection against farm theft. The history of Wai´anae shows repeatedly the importance of access to water for people to grow their own food. For decades before the sugar plantation closed, tension had grown among Hawaiian farmers who suggested the plantation used up all the water to create energy without any regard for the Indigenous taro farmers who had established homesteads in Wai´anae and Nanakuli. In 1946, the Wai´anae plantation closed after some years of drought and economic losses as workers joined unions and wanted higher salaries. As the plantations closed, many of the workers continued living in Wai´anae. Chinese and Hawaiian people transitioned to grow taro while Japanese made charcoal from keawe wood and Portuguese operated many small dairies (McGranth & Brewer, 1973).

One of the remaining challenges and continued tensions of farmers in Wai´anae has to do with water access, rates and Board of Water Supply. Farmer Aunty Lani who sells her food via the Wai´anae Food Hub makes a comment about access to free water in the old days:

> My father-in-law had a huge farm by Toledo dairy, Waianae valley and he had the flumes that use to come in his property so he use to water at night, because the other farmers were not, he had enough water to do that, but then he stopped and he had to use Board of Water…we use to have [free access] access flumes and stuff before the waters used to come out from deep up in the mountains but Board of Water started like boarding it up and have for just their own use to have and disburse. (farmer interviews)

Young (2019) gives a personal account of water tensions in Wai´anae and the kind of cultural trauma it can cause for Hawaiian people:

> In 1974 and 1979, respectively, the Honolulu Advertiser ran articles about my ‘ohana, describing the sixty or so residents of my great grandparents’ house in Wai´anae Valley as “old” Hawai´i, denoting communal farming arrangements and little need for the grocery store. On February 15, 1974, staff writer, Pat Hunter writes an article entitled “At the Keamos, aloha is alive and well.” She begins the article with a paradox, “If you believe that the old Hawai´i has disappeared—that there’s no aloha spirit anymore—take a trip out Wai‘anae way and drop in on the Keamo family. You’ll be surprised” (Hunter, 1974, B1). Focusing on my ‘ohana’s ability to meet the nutritional needs of over sixty people every night with farm grown foods and ocean caught resources, the article highlights the rotation of farm, household and kitchen duties. Healthy taro patches meet with free-range chickens, pigs, flowers and vegetable gardens, offering a glimpse into what scholar Enrique Salmòn calls a “kincentric ecology” where human life and nature interweave an intimate sense of belonging and place, (Salmòn, 2012).
>
> Perhaps most haunting of the images is the verdant kalo patch captured in the backyard. The patch is fed by a healthy, flowing stream. Unfortunately, by the time I came of age, the stream was gone. According to my dad’s sister, the Board of Water Supply capped and privatized the backyard stream in the 1980s. The lack of water further alienated my family from their traditional farming practices. (p. 53-54)

Another comment from farmer Kawika shows how water rates, access and problems of trusting the Board of Water Supply still continue in Wai´anae and prohibit farmers from increasing production:

> Working with the state is a pain in the ass... our state is trynna push towards Ag but I can’t even get Ag rates right now cuz I don’t have enough things growing yet in their eyes. So that’s a three [to] four hundred dollar water bill that could be down to a hundred fifty if I had Ag rates. You know that’s something you gotta challenge you know, the state you know... they don’t even have a grace period to help you get started…stop selling themselves to big corporate companies. If you’re a big corporate company and your selling produce or your selling food and its coming from the mainland or China or wherever the hell and they don’t want farmers here in Hawai´i to compete with them. I mean I understand there’s some foods we can’t grow here and that’s fine but there’s thing we can here and have the environment to grow. But the challenges is we have as farmers, let alone its hard working ten to twelve hours a day for fifty cents a day, you know. On top of that you got permits, water rights, you can’t farm, you can’t just farm. You know, I mean just farming alone is challenging. I spent three thousand dollars on the back-flow meter and irrigation throughout the property, still can’t get Ag rates. I think the state is challenging, they say they want to help be more agriculture friendly… the challenges we have with water in Waianae we kinda got to pick and choose what you grow and how you grow it. (farmer interviews)

The challenges faced by Hawaiian farmers in Wai´anae such as Kawika are ongoing and multiple in relation to access to water and with the Board of Water Supply (BWS). First, and as reflected by Kawika’s comment, the Hawaiian traditional type of farming does not qualify to agricultural

rates of water. When food producers do not have access to those rates their cost can increase anywhere between $4,000 to $10,000 per year. The larger problem is that the State ignores the effects of traditional and small farmers on food security. The compounded problem of no access to water was expressed in Young's comment and results in a total erosion of the Hawaiian way of life. Institutions like the BWS have not deliberately addressed the water need of traditional Hawaiian farmers.

Conclusion

The overarching purpose of this article is to show the enormous potential of Indigenous people who grow food to feed their family and friends when paired with a food hub. Prior food systems research and comments from the farmers who participated in this research confirms that these food growers are ignored by the conventional food supply chain. However, the collective impact of their production becomes apparent as the food production from these growers is aggregated and distributed through a community-oriented food hub. This research shows that food is still growing abundantly in Wai´anae homes. The hub was strengthened by the historical and cultural advantage of people in Wai´anae who grow food. Growers who participated in the hub were able to utilize it without altering their livelihood and their multiple other jobs and kinship activities. The article further suggests that accessing new markets through the Wai´anae Food Hub perpetuates sharing food the way that people did historically in Wai´anae and reduces food waste in people's backyards. Food wasted in people's backyards, just like their contributions to local food production, have been largely overlooked or ignored in food systems research.

The research also makes advances toward to understanding the "hidden" contributions of backyard growers in local food production. Growers who utilize the Wai´anae Food Hub at Kahumana align best with Bittenbender's (1993) description of multiple income farm families (MIFFS) and Lincoln and Ardoin's (2015) "subsistence" typology of farmers. According to Lincoln and Ardoin (2015) these farmers are likely overlooked in official numbers regarding food production on the island because they do not engage in classic, accountable economic pathways. They do, however, contribute substantially to local food production even if their effects may systematically be underestimated (Lincon & Ardoin, 2015). This research is a significant step in the right direction toward understanding that "dark figure" or the contributions of those farmers that has been systematically underrepresented.

This research further argues that hubs can reduce food insecurity for growers involved by creating culturally appropriate economic opportunity. A food hub gives back to the community by creating an extra income opportunity for people who grow food. Several of the growers who participate with the Wai´anae hub reported that they suffer from food insecurity. With the added economic opportunity in their backyard, they can raise their own income and, as a result, reduce their level of household food insecurity and dependence on food stamps.

The research suggests that planners can enhance community food security by working closer to understand and prioritize community-oriented food hubs in areas with higher concentration of Indigenous peoples. By doing that, planners address the lack of supply of local foods simultaneously as addressing other important aspect of Indigenous people's social well-being. Recent research on food security have suggested an alternative concept of 'food wellbeing' that is an approach that combines insights from food security, food sovereignty, and social wellbeing perspectives (Gartaula et al, 2017). A more updated view on food security, food insecurity, and indigenous wellbeing for rural areas should aim to create culturally relevant economic community development projects like food hubs to solve multiple problems. It would result in better food access when increased local food production and but also better income opportunities for rural residence resulting in poverty alleviation. That would challenge planners' current thinking of community food security to consider rural wellbeing and target strategies that pay attention to food sovereignty, food security and indigenous wellbeing at the same time. All of this suggests that creating community economic development opportunities that is culturally appropriate such as the community-oriented food hub model is a better perspective to solving food security and insecurity rather than allocating more food stamp resources to the poor who suffer from food insecurity.

Finally, the article has highlighted some legislation, the Food Hub Pilot Program introduced to the 2020 Hawai´i Legislature Session, to promote community-oriented food hubs like the Wai´anae Hub. It also traces challenges experienced by food growers in Wai´anae that go beyond food hubs and access to markets. Water rates and access in Wai´anae remain a challenge for home growers and their way of life. For people in Wai´anae, growing food is a strategy to be free from of all forms of external control and domination, growing food is to pursue fully conscious self-determining activity. To that extent, challenges with the cost of and accessing water remain a hinder for people to pursue that freedom.

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