

Hawai'i's Food System: Food for All



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Executive Summary

This report examines the food system of Hawai'i with special attention to low-income access to food.

To do so, we examine the conditions under which low-income people currently obtain food. Then we examine the history of agriculture. Next we profile several promising food initiatives. Finally, we make recommendations for strengthening community-based food systems on the Islands.

As we performed our research, the plantation era on Hawai'i ended when HC&S halted production on its final 36,000 acres of sugar on Maui on December 31, 2016. This concluded a 180-year period in which Hawai'i gradually abandoned traditional agricultural practices, based on careful stewardship of land and water in each *ahupua'a* (watershed) that ensured everyone was well fed. Beginning in 1836, plantations spread across that same landscape. These held a new focus: making money by exporting crops that had been grown on an industrial basis. By the early twentieth century, sugar cane and pineapple dominated the Islands.

At first, Hawai'i still largely fed itself, if only because the costs of importing food were so high. Plantation workers often had gardens of their own. A few Western-style farms took hold, raising cattle, milk, eggs, and produce. Yet as a soldier population concentrated on O'ahu during World War II, and as transport became less expensive, the state began to import more of its food. Rising incomes encouraged expanding consumerism, but also left many Hawai'i residents relatively worse off.

Because purchasing decisions were made off the Islands, plantation agriculture was itself vulnerable to global market pressures. The industry would not have survived without public intervention.

Nonetheless, pineapple production diminished immediately after statehood, as lower-cost producers emerged in Asia and Central America. Sugar production began to decline just a few years later, as landowners found greater opportunity in selling land for housing and tourism development.

Plantations had certainly created wealth for a ruling elite, but this form of agriculture often brought negative impacts: concentrated economic and political power, environmental harms, and a lack of attention to ensuring that Hawai'i produced food for itself. Moreover, by importing laborers and paying low wages, the plantation created a permanent underclass. Although unions subsequently helped raise workers' wages, and ensured that low-cost housing would be built, plantation agriculture served as a prime force in creating poverty.

Emerging from the remnants of plantation agriculture in recent decades, dozens of initiatives have been launched to foster food production for Hawai'i markets. With limited investment capital or public support available, a number of individuals, farms, organizations, and agencies have taken steps to build community-based food trade on their own. While community-based, these efforts have been launched by farms and organizations of all sizes.

- **Individuals** with a solid social vision took great risks to foster community-based food production. One prime example is the Olson Trust.
- **Nonprofit organizations** (including food banks, community health centers, food hubs, schools, and educational nonprofits) began constructing community-based food systems that engage low-income communities. The Food Basket on Hawai'i Island is a prime example, as is the Kōkua Kalihi Valley (KKV) Health Center, the Waianae Coast Comprehensive Health Center, Sustainable Moloka'i, and several others.

- At times, **public agencies** have leveraged this work. The Department of Health supported grassroots networks on O'ahu over several years, and the Department of Agriculture injected potent new energy into farm-to-school efforts.

Often such initiatives have been below the radar and thus overlooked by public officials. The focus of agriculture policy is usually on land use, water allocation, and export markets while public health policy focuses on hunger, food insecurity, and food access. The entire food system as a whole is rarely considered in a comprehensive fashion.

Now Governor David Ige has set a bold new vision stating that food production for local markets should be doubled in four years. This is welcome news to a state that is the most geographically isolated population center in the world, some 2,500 miles from the North American continent, and that **imports about 85% of its food, at a cost of \$6.8 billion per year.**

Yet many farmers do not view doubling food production as a practical goal given current economic constraints. Moreover, attempting such rapid progress means depending heavily on outside investors and expertise, mirroring plantation investment patterns. **The impact of the Governor's call is also limited unless it pays close attention to building food systems, not simply increasing production.** If these new firms are to survive over the long term, supportive infrastructure is required, and loyalties must be built among consumers.

Moreover, poverty is growing in Hawai'i. Feeding America estimates that nearly 200,000 residents, one-seventh of the population, are food insecure. Some place the count even higher. The state's low-income residents are unlikely to buy much of this new food raised on the Islands since they lack purchasing power; higher-income Hawai'i residents and tourists will be the main beneficiaries of these new harvests. Producing food for Hawai'i *markets* is not the same as producing food for Hawai'i *residents*.

This report examines the Hawai'i food system through the lens of low-income access, asking how low-income residents can best obtain healthy and locally grown foods. Our conclusion is that commercial markets will continue to fail low-income residents. Other systems will have to be put into place to ensure that all who live in Hawai'i have proper access to healthy foods. Moreover, with food relief systems undergoing a sea change, innovative relief systems must also be developed, even as we strive for a more equitable food system.

Our research shows that low-income residents face a unique quandary in Hawai'i: while workers have the lowest average income in the US, Hawai'i is one of the most expensive states to live in. In particular, food costs are 61% higher than in the rest of the US.

We also found that health issues are closely related to food. As one example, state residents spend an estimated \$1.1 billion each year to pay for the direct and indirect medical costs of diabetes, a condition that plagues 8.5% of the state's people. This is only one example among many food-related diseases.

Low-income people face additional pressures since they have minimal connection to farmers. While they do spend \$18 million in Supplemental Nutrition Assistance Program (SNAP) benefits buying food at farmers' markets, and may have substantial access through family networks to locally hunted, fished, or harvested foods, few can afford the foods that emerging growers grow, or the specialty items that restaurants feature.

Growers themselves report that farm income is not stable. The history of agriculture in Hawai'i shows long-standing trends that have worked against community wealth creation.

In a dogged effort to address these issues, several individuals, organizations, and agencies have begun to grow food within community settings. These efforts aim to ensure both better farm income and better access for low-income residents.

Several of these community-based food systems are profiled in this report as examples of what is already emerging. To support this work, significant public commitment is required.

Our recommendations include:

1. The State of Hawai'i must ensure that all eligible Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps) recipients can easily enroll and receive benefits. This may bring as much as \$100 million additional income into the state economy.

2. Food system leaders should dedicate concerted resources to building community-based food systems — not simply local food production — while paying particular attention to engaging low-income communities. Private firms, nonprofits, and public agencies alike have helped build community-based food systems. Consistent public support will be needed for as long as immense inequalities of income exist.

3. Hawai'i should consider community-based food systems as an integral part of the state's Public Trust, as defined by the Hawai'i Constitution and reinforced through legal precedent. As shown below, court precedent holds that the State carries a Trust responsibility whether legislators act or not, yet we urge legislators to formalize this in law.

This is a call to create a new **culture** of self-determination. Rather than waiting for outside investors to appear, the state can build health, wealth, social connection, and personal capacity from the ground up using its own resources and vision. This work will draw upon insights gained from traditional food systems, create more opportunity for cultural enclaves to thrive, address new market realities, attract local investment, and create innovative technologies. While community-based, it will require the engagement of stakeholders at all levels of capacity.

Table of Contents

EXECUTIVE SUMMARY	2
TABLE OF CONTENTS.....	5
ACKNOWLEDGEMENTS	8
INTRODUCTION	13
'ĀINA, AHUPUA'A, AND OHANA	14
FROM FIELD TO FORK — WHAT IS A FOOD SYSTEM?	17
BUILDING COMMUNITY-BASED FOOD SYSTEMS.....	19
DEFINING FOOD ACCESS & SECURITY	21
HUNGER AND FOOD INSECURITY ARE MARKET FAILURES.....	22
<i>Cost of Living.....</i>	23
<i>Health and Wellness</i>	23
<i>Housing and Homelessness.....</i>	23
LIVING WITH FOOD INSECURITY: HOW DO LOW-INCOME PEOPLE FIND FOOD?.....	25
STATE-PROVIDED FOOD ASSISTANCE	29
SNAP	30
WIC	33
COMMUNITY BASED INTERVENTIONS.....	33
<i>Sources of Food for Relief</i>	34
<i>Forms of Distribution and Access.....</i>	36
<i>Food Banks Face Dilemmas in the Future</i>	38
MORE THAN HUNGER: ADDRESSING FOOD INSECURITY AND ACCESS	38
FARMERS' MARKETS PROVIDE SOME ACCESS.....	39
FOOD BANKS BUILD COMMUNITY NETWORKS.....	40
EXPANDED FOOD BANKING MODELS MOBILIZE HEALTHIER LIFESTYLES.....	42
KTA SUPERSTORES THRIVES ON PARTNERSHIPS.....	43
FARM-TO-SCHOOL HELPS BUILD NEW CONNECTIONS.....	44
HISTORICAL AND ECONOMIC OVERVIEW OF AGRICULTURE AND FOOD PRODUCTION	48
THE FIRST CASH CROP - SUGAR	48
<i>Sugar Appeared Impractical at First</i>	48
<i>Sugar Depended Upon Public Land Use Policy & "Foreign" Trade Policy.....</i>	49
<i>Hawai'i Conforms Itself to Sugar</i>	49
<i>The US Takes Over</i>	50
AN ERA OF CASH CROPS — PINEAPPLE, COFFEE, MAC NUTS, AND SEED CORN	53
Pineapple	53
Coffee.....	54
Mac Nuts.....	55
<i>The Seed Corn Industry Grows</i>	56
FOOD CROPS TO FEED A GROWING POPULATION.....	58
Livestock & Fish.....	59
Fruits, Vegetables, Other Food Products	66

HAWAI'I FARMS HAVE NOT FARED WELL IN RECENT YEARS	67
SHORT-TERM SUBSIDIES CREATE LONG-TERM DILEMMAS	78
PROFILES: BUILDING NEW COMMUNITY FOOD TRADE	82
<i>'Nalo Greens (Waimanalo, O'ahu)</i>	84
<i>Ho Farms (Kahuku, O'ahu)</i>	86
<i>The Olson Trust</i>	86
<i>OK Farms, Hilo, Hawai'i</i>	89
<i>Kamehameha Schools (KS)</i>	91
<i>Waipā Foundation</i>	92
<i>MA'O Farms & Waianae Coast Comprehensive Health Center</i>	94
<i>Kōkua Kalihi Valley (KKV) Health Center</i>	96
<i>Sustainable Moloka'i (Moloka'i)</i>	102
<i>University of Hawai'i Extension Moloka'i</i>	103
<i>The Kohala Center</i>	104
<i>Food Bank Helps Build Food Systems</i>	106
<i>Hawai'i 'Ulu Producers Co-op (Hawai'i Island)</i>	106
GOVERNMENT INITIATIVES AND VISIONS	107
THE FUTURE OF THE HC&S SUGAR ACREAGE	108
CONCLUSIONS	110
ADDITIONAL CONCERNS	111
COMMUNITY-BASED FOOD SYSTEMS AS A PUBLIC TRUST	112
RECOMMENDATIONS	117
IMMEDIATE NEXT STEPS AND PRIORITIES.....	118
MID-RANGE ACTION STEPS.....	119
LONG-TERM ACTION STEPS	120
BIBLIOGRAPHY	121
APPENDIX A: FOOD BANK PARTNERS IN HAWAI'I	126
APPENDIX B: BRIEF HISTORY OF US FOOD BANKING AND FOOD RELIEF	131
APPENDIX C: FARM INCOME BY COUNTY	133
HAWAI'I ISLAND.....	133
KAUA'I	134
MAUI COUNTY	135
O'AHU	136
APPENDIX D: DIRECT SALES AND NET FARM LOSSES BY ISLAND	137
APPENDIX E: INFRASTRUCTURE FUND MODELS AND RECOMMENDATIONS	138
MODELS FROM ACROSS THE COUNTRY	140
<i>Tobacco Trust Fund Commission, North Carolina</i>	140
<i>Pennsylvania Fresh Food Financing Initiative, Pennsylvania</i>	141
<i>Farm Viability Enhancement Program and Matching Enterprise Grants for Agriculture Program, Massachusetts</i>	142
<i>Flexible Capital Fund, Vermont</i>	142
<i>Michigan Good Food Fund (MGFF)</i>	142
<i>Fair Food Network Initiatives</i> :.....	143
RECOMMENDATIONS FOR FUND DEVELOPMENT	143

REFERENCES 144

APPENDIX F: INVASIVE SPECIES AFFECTING AGRICULTURE 145

Coffee Borer Beetle 145

Little Fire Ants (or Red Ants) 145

Coqui Frogs 146

Rat Lungworm Disease/ Mollusk Infestations 146

APPENDIX G: METHODOLOGY AND AUTHORS..... 147

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Introduction

Across the United States, communities are working determinedly to build food security among low-income communities and to increase the resiliency of local food systems.

These efforts are in response to decades of public and private investment that have created an agribusiness which enjoys immense economies of scale and creates billions of dollars of economic activity through highly specialized commodity farms. Yet these same systems leave many Americans wondering where to find food they can actually eat. In hopes of building community-based food options, a vibrant national movement has emerged, founded upon efforts to form stronger commercial and social networks that engage neighboring firms in food trade and build local economic multipliers.

This movement has been very strong in Hawai'i as well. While the overall concerns are not unlike those faced across the US, Hawai'i has been more proactive than most states because civic leaders have recognized that the state is especially vulnerable. Located more than 2,500 miles from its food supply, and deeply dependent on ocean and air transport, Hawai'i has taken steps to produce more food close to home. Many farms began striving to sell to local markets decades ago, and multiple state initiatives have established access to, and protection for, land, water, and other natural resources.

Low-income residents faced special challenges even as local food production grew, because many could not afford the new high-quality products. Relief work that had been undertaken for decades in low-income communities became viewed as a limited approach. In 2010, Hawai'i leaders launched new processes that strove to make relief work more proactive and more empowering to low-income recipients. Quietly leading this effort was the Hawai'i Department of Health (DOH) SNAP-Education Program. Aiming to magnify the persistent work of community initiatives, it launched a community networking pilot project in the Kalihi neighborhood of Honolulu. In 2013, this networking effort was expanded to the Island of Hawai'i in partnership with The Kohala Center and The Food Basket. Early steps included creating a food hub, founding a Community Supported Agriculture (CSA) project, engaging schools in purchasing from local farms, and opening up electronic (EBT) access at farmers' markets. Since then, similar community networks have formed in key low-income communities to establish better access to fresh fruits and vegetables. As a result, in July 2015, DOH began a statewide networking initiative to bring together the communities who are working to improve access and healthy eating. The Oregon Food Bank's FEAST process helped inform this networking effort.

In 2015, Jeffrey Melrose and his collaborators at the University of Hawai'i at Hilo compiled a *Statewide Agricultural Land Use Baseline* — an excellent compendium of land use data — with support from the Hawai'i Department of Agriculture (DOA) (Melrose, Perroy, & Cares, 2016). The Melrose report's stated purpose is “to provide a current depiction of Hawai'i's commercial agricultural footprint as a tool to inform state policy makers, managers, and the broader agricultural community about *where* Hawai'i farms are, *what crops* are being grown, and *what water sources* serve each area of agricultural production in 2015.”

This Agricultural Land Use Baseline offers considerable historical perspective, with maps showing land use prior to contact, in 1937, and in 1980. It is the first comprehensive publication of data covering land use in Hawai'i since 1980. The report includes detailed, color-coded maps and tables showing the allocation of major crop and pastureland acreage across each of the islands, and a narrative summary identifying major commercial products on each island.

Yet it is important to note that agricultural production is not always the same as food production, and is certainly not correlated with food access or healthy food consumption by area residents. Indeed, Hawai'i's commercial agriculture industry has strongly tended towards the export of cash crops.

Studies show that Hawai'i imports about 85% of the food it eats (Leung and Loke, 2008; Loke and Leung, 2013; Hollier, 2014; Meter, 2003). While this is a striking dependency, it nonetheless places Hawai'i far above most states in the union for self-sufficiency: the majority of states import at least 90% of their food, and many import 95% or more. Yet the vast distance food has to travel, the time involved in ocean travel by barge, and the lack of backup systems raise strong concerns among Hawai'i residents. Moreover, Hawaiian culture is essentially based on stewardship of *'āina*: "that which feeds us." Importing food does not sustain this culture.

Hawai'i enjoys exceptional climactic conditions for growing food year-round, and traditional farming once supported a population similar in size to the current count of 1.4 million people (United States Census Bureau, 2015). Moreover, as the plantation era ends, new lands are becoming available. The state has invested \$40 million in efforts to set aside farmland and build local food infrastructure in Central O'ahu. As outlined below (see page 108), HC&S is converting 36,000 acres of former sugarland into smaller farms that will grow forage for livestock, energy crops, diversified crops, and fruit trees. The Ulupono Initiative has announced plans to build a new grass-fed dairy operation on Kaua'i, and investors are trying to reclaim local ownership of Meadow Gold with a \$25 million upgrade to the processing plant.

The Islands have attracted the attention of outside investors, as well. Department of Agriculture Chairperson Scott Enright noted that one venture capitalist from Cleveland plans to invest \$75 million to renovate a dairy plant. Two major North American egg producers have been exploring the possibility of developing a 300,000 to 1-million hen laying facility in central O'ahu since 2015. One of the firms interested is Indiana-based Rose Acre Farms, the second largest egg producer in the US.

Yet concerns linger about who will benefit the most from these efforts, since these rely upon outside capital, technologies, and expertise. Some see echoes of the plantation industry in the state's quest to find a third party that will develop a food industry, rather than growing one from within. The history of plantation agriculture also limits the state's options, since significant food infrastructure is lacking. As Enright pointed out: "We don't have a rich history of family farms in this state." This means an absence of storage, distribution, and marketing facilities geared to internal food trade.

As the state moves to grow more of its own food, it may find itself limited by plantation-era political habits: the legacy of large-scale planning and top-down decision-making that cloud efforts to build a self-determined future. Many residents and civic leaders believe that since the challenges of feeding Hawai'i residents are so immense, only large-scale investments will make a difference. Yet a healthy food system involves both large and small-scale players — and the only food system on Hawai'i that reliably fed up to one million residents was the traditional food system.

'Āina, Ahupua'a, and Ohana

The original settlers of the Hawaiian Islands found limited food sources when they first landed perhaps 1,700-1,900 years ago. All of the islands, we are told, were completely forested, with no sign of human habitation.

Accordingly, the new arrivals took a fairly direct approach to ensuring they could survive on these islands. Drawing upon their astute navigation skills and sailing thousands of miles from their Polynesian homelands by canoe, they brought with them what are now called the “canoe crops.” Among these were staples such as *kalo* (taro), *‘ulu* (breadfruit), *‘uala* (sweet potato), *niu* (coconut), *mai’a* (banana), calabash, *kō* (sugarcane), *‘olena* (turmeric), and *‘awapuhi* (ginger), as well as fiber and medicinal plants.



Fish Pond near Lihue, Kau'ai

Over several generations, those who chose to dwell on the Hawaiian Islands cultivated these nutritious crops and cared for the soil and water in such a way that each Islander could work four or five hours per day, take advantage of considerable leisure time, and count on eating enough food. Land was thought to belong to immortal gods and, as a result, couldn't be owned. People tended to their *ahupua'a*, often a wedge-shaped cultural entity and division of land. Many were defined by a single watershed, extending from the highest hills to the ocean, while others were landlocked. Gonschor and Beamer counted 1,825 of these subdivisions across the Islands (Gonschor and Beamer 2014). They added that this land and water management system was defined by Hawaiians differently than in any other Polynesian society. What made it unique was that, at its core, the system was based on offering tributes to a central authority, intended to ensure that the land would be productive. *Ahupua'a* were administered by a *konohiki*, a resource manager appointed by the ruler of a larger district, or *moku*. This manager was charged with coordinating work duties and ensuring that food was provided to all. Food was not sold.

Any surplus was shared with family and neighbors (*ʻohana*). Diets were largely composed of cultivated taro, sweet potatoes, yams, chickens, pigs, domestic dogs, and seafood.

Work teams were specialized, with each team managing resources within a certain realm such as fishing in the sea, tending a fishpond, planting and harvesting, or ensuring the flow of water. *Ahupuaʻa* were relatively independent, with people meeting most all their daily needs within their own land division.

MacLennan notes, “Early nineteenth century Hawaiian society was organized around reciprocal obligations between the *aliʻi* (chiefs) and *makaʻainana* (commoners) and cemented in a sacred relationship to land and water” (MacLennan, 54). This was structured around collective ownership and stewardship of land and water as integrated elements of each *ahupuaʻa*. When the 1848 *Mahele* established private property, traditional relationships to the land were dismantled, thus severing a spiritual connection that simply was not recognized in Western-styled law. “Gradually,” MacLennan concludes, “Government policy shifted toward privileging economic over community interests [for water]” (MacLennan, 147).

From Field to Fork — What is a Food System?

Traditional food gathering and growing practices constituted a food system that was solidly rooted in community and culture, and one quite different from what we depend upon today. Before we examine the conditions low-income residents face, we step back to define what the food system of today looks like.

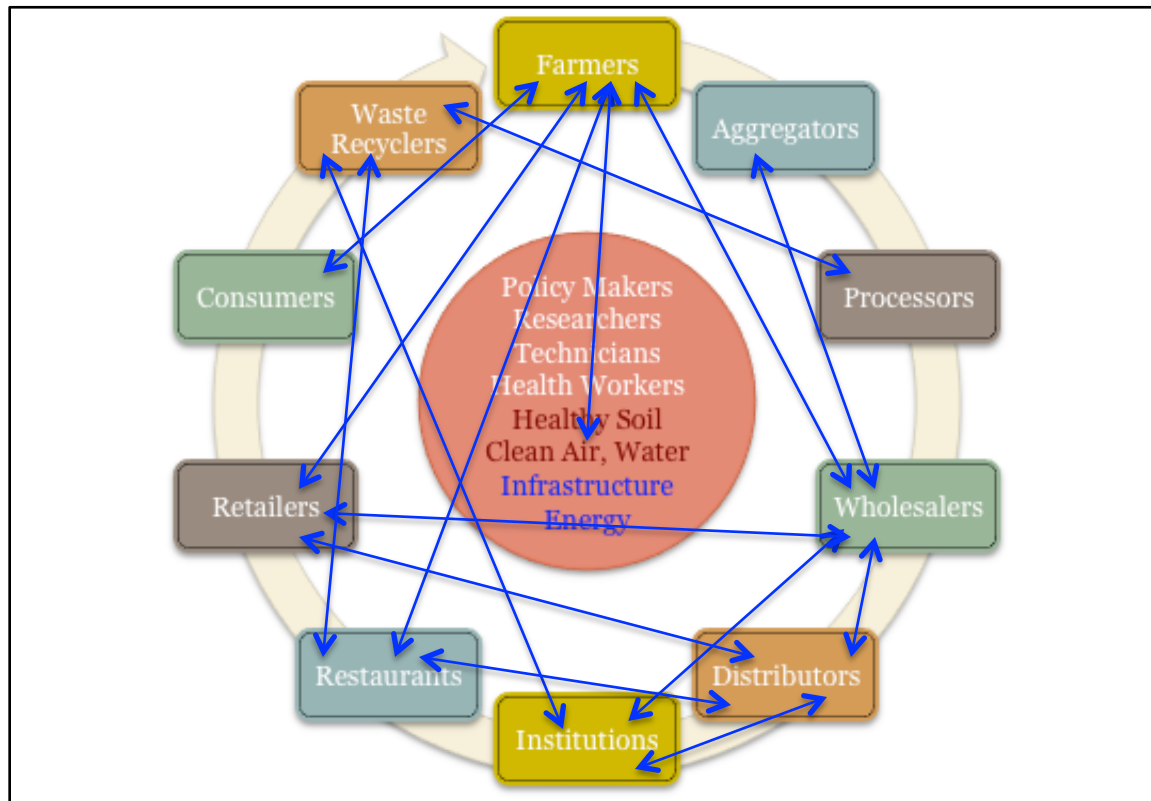
Diagram 1: One Depiction of a Food System



Source: Ken Meter and Megan Phillips Goldenberg (2016). Developed for USDA Agricultural Marketing Service Economic Impacts Toolkit.

This is a simplification of the actual relationships that are embedded in any food system. In daily operation, food system practitioners interact with each other in far more complex ways, as Diagram 2 below shows:

Diagram 2: Interactions Among Actors in a Food System



Source: Ken Meter and Megan Phillips Goldenberg (2016).

Of course, the above diagram is also an oversimplification of the actual connections that are forged among actors in each food system. As one obvious example, this image does not clearly show the unique contexts or concerns that confront low-income residents. Yet the diagram does show the complexity of interactions that take place. This very complexity means that Hawai'i food leaders must be careful to include all stakeholders wherever possible, to engage them in thoughtful consideration of alternatives, and to take relatively small steps to build a solid foundation that accounts for how a system will push back against efforts to change it.

The complexity of community food networks also sets the stage for economic development, because strengthening economic multipliers (essentially the number of times a dollar spent in Hawai'i cycles through the economy before leaving) depends intimately on the formation and regeneration of social and commercial networks such as these. Simply put, the stronger the social and commercial bonds that cohere in a given community, the greater the economic multiplier will be, since a local product cannot be traded locally unless the buyer and the seller are in contact with each other.

Further, our consulting team would like to make one further distinction that will prove invaluable to Hawai'i's efforts to strengthen local food trade. While we certainly encourage local farms to connect with local buyers in the state, we note that the term "local food" can be problematic when setting a vision for the Hawai'i food system. Local food commerce that is impersonal will not produce the consumer loyalty needed to sustain farms and food enterprises. Only when consumers are committed to

supporting local firms will Hawai'i food be favored over imports from regions having lower labor and land costs.

The competitive advantage that “local food” has in a marketplace that efficiently ships fresh food items on a daily basis from Mexico, Chile, and China to Honolulu supermarkets — often selling for a lower retail price than nearby farmers require — is the strength of consumer loyalty that farmers have built with buyers. In many cases, farmers striving for sales near their own farms are asking consumers to pay a slightly higher price for food items that are likely fresher and from a known source. When cheaper options are available, however, only consumers who place a priority on investing in relationships with local growers (or local processors) are likely to pay the higher prices farmers need. This means that those producers who have built bonds of community loyalty with buyers are those who will hold the competitive edge.

We have also seen a tendency for intermediaries to use the phrase “local food” in ways that create favorable impressions among consumers, but do not actually ensure that food trade is based in strong community networks. For example, some restaurants feature “local” food but do not specify which farm raised the food, or which processor prepared it. Distributors may put a “local” label on foods that were raised off-island. Food bank recipients may obtain fresh produce without gaining a connection to the farmer that raised it, or even knowing how it was grown. When “local” food is anonymously presented, little consumer loyalty is built.¹

Even more apparent, marketing attention to “local” food has typically overlooked low-income residents of Hawai'i. Those who hold limited purchasing power will not be able to pay for Hawai'i-grown food by a farmer who needs to recoup high land and input costs. Only if food is grown in inclusive, community-based settings will all residents be able to assume they have access to proper foods.

Seeing this dynamic play out in food system after food system across the U.S. has led our consulting team to conclude (for all of the reasons outlined above) that opting to build a “local food system” can be a trap. Rather, we emphasize the need to structure the Hawai'i vision as one that builds a stronger “community-based food system.”

Building Community-Based Food Systems

We define community-based food systems (CBFS) as “Networks of farms and food businesses that do business in order to build community health, wealth, connection, and capacity, as well as to sustain themselves financially.”

One prime example of a CBFS is Fifth Season Co-op in Southwest Wisconsin, a group of organic farmers who invited a hospital CEO to sit on their board, who then invited the CEO of a national food distribution firm to sit on the board, and who also invited the co-op workers to join the board. The cluster of businesses manages the supply of products that are grown within the network each year, and sets minimum and maximum prices for each product sold. Value-added products are produced for the hospital and schools to purchase. Fifth Season is profiled in Appendix E.

¹ This is a key insight of our prior research. See Snyder, B; Goldenberg, M.P.; Meter, K.; Miller, S.; Smith, L.; & Amsterdam, R (2014). “The Real Deal: How Do We Define ‘Local’ in a Meaningful and Measurable Way?” Pennsylvania Association for Sustainable Agriculture, Crossroads Resource Center, Farmers Market Coalition, and FoodRoutes Network. June 30. Available at 1local.org/resources/

On a more limited scale, community-based food system activity has been pursued in Hawai'i for decades. The following are examples of activities that help build community-based food systems that have been undertaken in Hawai'i or in other states:

- A farmer who donates time to cultivate a one-acre parcel of land inside city limits to raise food to donate to low-income residents.
- A food bank or school that uses forward contracts with farmers to buy “seconds” so farmers have an additional, secure source of income.
- A university or hospital that trains inner-city youth to grow, prepare, and eat healthier food options.
- A family farm that sells direct to household customers through a farm stand, farmers’ market, or CSA (Community Supported Agriculture) subscription.
- A family farm that sells directly to an independently owned grocery store.
- Farmers’ co-ops, retail grocery co-ops, or multi-stakeholder co-ops that respond to the needs of member farmers and consumers.
- A grocer that discloses the value of the foods it purchases from each nearby family farm or processor.
- A restaurant that publicizes the value of the foods it purchases from each nearby family farm or processor, and that tells customers which farm raised the foods listed on the menu.
- A wholesaler that preserves the identity of each farm in food shipments so the customer knows the source of each food item, not simply assurance this is a “local” food item.

The more these activities build an intentional spirit of collaboration among Hawai'i food leaders, and lasting social and commercial networks, the more community-based foods activity thrives.

Community-based food systems may involve farms of any size. Since selling food directly is one of the few statistical measures we have to indicate that a farm is forging community connections, a quick glance at Census of Agriculture data from 2012 shows that farms at all levels of scale sell direct. Most of these sales come from mid-range farms.

Table 1: Hawai'i Farms Selling Products Directly to Individuals for Human Consumption, by Sales

Range of total farm sales	Number of farms	Sales in \$1,000s
Less than \$1,000	122	40
\$1,000 to \$2,499	239	258
\$2,500 to \$4,999	263	467
\$5,000 to \$9,999	264	726
\$10,000 to \$24,999	361	1,601
\$25,000 to \$49,999	173	1,536
\$50,000 to \$99,999	80	1,530
\$100,000 to \$249,999	56	2,146
\$250,000 to \$499,999	25	1,719
\$500,000 to \$999,999	12	2,076
\$1,000,000 or more	11	1,116
All farms	1,606	13,215

Source: Census of Agriculture (2012)

Note that a more recent local foods survey performed by USDA in 2015 tallied 1,234 farms selling \$22.8 million of food directly to household consumers (USDA NASS: 2015 Local Food Marketing Practices Survey).

With these basic definitions spelled out, we move on to summarize the results of our research.

Defining Food Access & Security

Food access and security is complex, consisting of three to five dimensions — availability, accessibility, affordability, acceptability, and accommodation. The first three (and most common) indicators are largely systems indicators, whereas the last two are more individualistic and difficult to evaluate. The formal definition of Food Insecurity refers “to USDA’s measure of lack of access, at times, to enough food for an active, healthy life for all household members, and limited or uncertain availability of nutritionally adequate foods.” USDA elaborates, “Food-insecure households are not necessarily food insecure all the time. Food insecurity may reflect a household’s need to make trade-offs between important basic needs, such as housing or medical bills, and purchasing nutritionally adequate foods,” (Feeding America, 2016). Thus the USDA and others commonly consider food access and security a function of economic security and poverty.

Yet in Hawai'i, where the population is exceedingly diverse, poverty and need are difficult to define. Rising costs of living, fueled by \$3 billion of annual real estate development, \$18 billion of tourist expenditures (Hawai'i Department of Business, 2016), and \$5 billion in military salaries (BEA, 2014), have all combined to increase inequality of wealth and income in Hawai'i. Today, 20% of the state's households earn less than \$30,000 per year (only 3.6% of all income), while the top 5% earn at least \$214,000 each and account for 19% of all income. Hawai'i has the twelfth highest median income in the country (United States Census Bureau, 2015) yet it also has the highest cost of living (Kirkham, 2015). Furthermore, the population is disparate, varying greatly from island to island, and even across each island.

Estimating the number of people experiencing food insecurity is difficult. One source suggests that the number of people living at or below 100% of the Federal Poverty Level (FPL) is strongly correlated with the number of people needing food assistance, while others suggest that anyone living at less than 185% of FPL is likely to experience food insecurity. Feeding America estimates that there are 194,610 Hawai'i residents who are food insecure, 14% of the state population. Further, it calculates that \$106 million in additional funding would be required to provide these low-income residents with donated food sufficient to meet minimum standards (Feeding America, 2016). This estimate may be low.

The geographic disparity of poverty is shown in greater detail on Map 1, which displays the Census block groups by proportion of residents living below a livable wage – defined here as the 185% of poverty level. There is a clear relationship to former plantation sites on O'ahu, while poverty rates on Moloka'i appear to be related to the closings of both a large cattle ranch and a major hotel. Poverty sites on Maui and Hawai'i Island appear to correlate mostly with distance from major population centers, except for poverty areas near Hilo. A special case is the Puna district, where low-cost housing options attracts low-income residents.

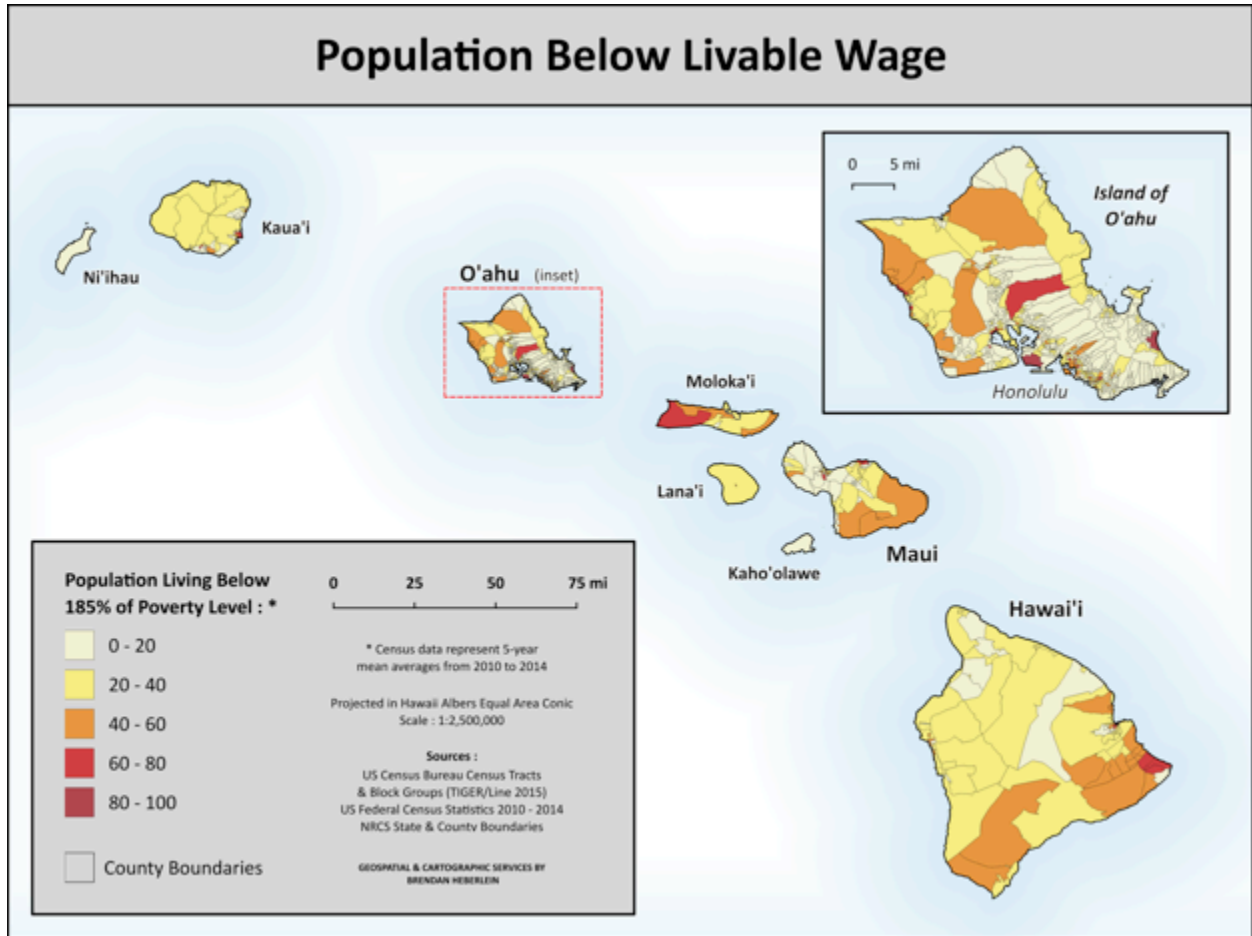
The number of residents on each island living below livable wage (185% of poverty level) is shown on Table 2, below.

Table 2: Residents Living Below 185% of the Poverty Line, 2010 – 2014.

O'ahu	Hawai'i Island	Maui	Kaua'i	State
199,233	65,003	39,843	17,015	321,094

Source: US Census, Five-year average, 2010 – 2014

Map 1: Regions in Hawai'i Where Incomes Fall Below 185% of Poverty



Source: US Census, Five-year average, 2010 – 2014

Thus estimates of the total population experiencing food insecurity in Hawai'i range from 150,000 to 350,000 or more in 2014, while Feeding America estimates 194,610 (Feeding America, 2016).

Hunger and Food Insecurity are Market Failures

Modern day residents of Hawai'i face realities far different than those experienced in earlier eras. While we live in a society ruled by markets, markets have failed. Ultimately, lack of access to food is a matter of unequal power in society, and persistent hunger, historically, has been caused by ineffective policy or a political or economic breakdown — not by lack of food (Lappé, 1971), nor primarily by individual

failings. This is especially true when residents are working two or three jobs to survive in failing marketplace; few have time to advocate for themselves, resulting in continuously disparate systems.

Cost of Living

Hawai'i has the highest cost of living in country, with some estimating real cost of living in Honolulu at 3.75 times the Federal Poverty Limit (Hawai'i Appleseed, 2016). The Appleseed Center's analysis of poverty in Hawai'i offers a solid overview of conditions as the state coped with the impacts of the global housing finance crisis of 2008. The study notes that unemployment tripled from 2006 to 2011, with low-income residents affected the most. Further, it points out that Hawai'i workers have the lowest average income in the US, at \$22,108, even while living in one of the most expensive states in the country, ranking second in the nation for percentage of millionaires, at 7.2%. Honolulu is the third-most expensive city in the nation after New York City and San Francisco. Lee pointed out (Lee 2012, 3) that even a basic food plan "costs 61 percent more in Hawai'i than on the mainland."

The report also documents one of the key structures that keep people poor relative to other residents: "Hawai'i taxpayers with incomes in the bottom 20 percent pay combined state income taxes at almost twice the rate of the top 1 percent." The cost of electricity is the highest in the nation, and this affects low-income people more than others, since utility costs take a larger proportion of their income.

Health and Wellness

A more recent survey of hunger, soon to be published by the Hawai'i Community Foundation, points out that "A substantial body of research links 'cultural trauma' — the loss of land and language, disconnection with traditions and practice — with today's health disparities. Food is an essential part of this equation" (Hawai'i Community Foundation 2016).

This cultural trauma involves a considerable share of the state population. Currently, 58% of Hawai'i residents are overweight or obese, while one of every ten residents has been diagnosed as having diabetes (CDC BRFSS, 2014). These conditions take a financial toll on Hawai'i. State residents spend \$1.1 billion each year covering the direct and indirect medical costs associated with diabetes (American Diabetes Association, 2012).

Housing and Homelessness

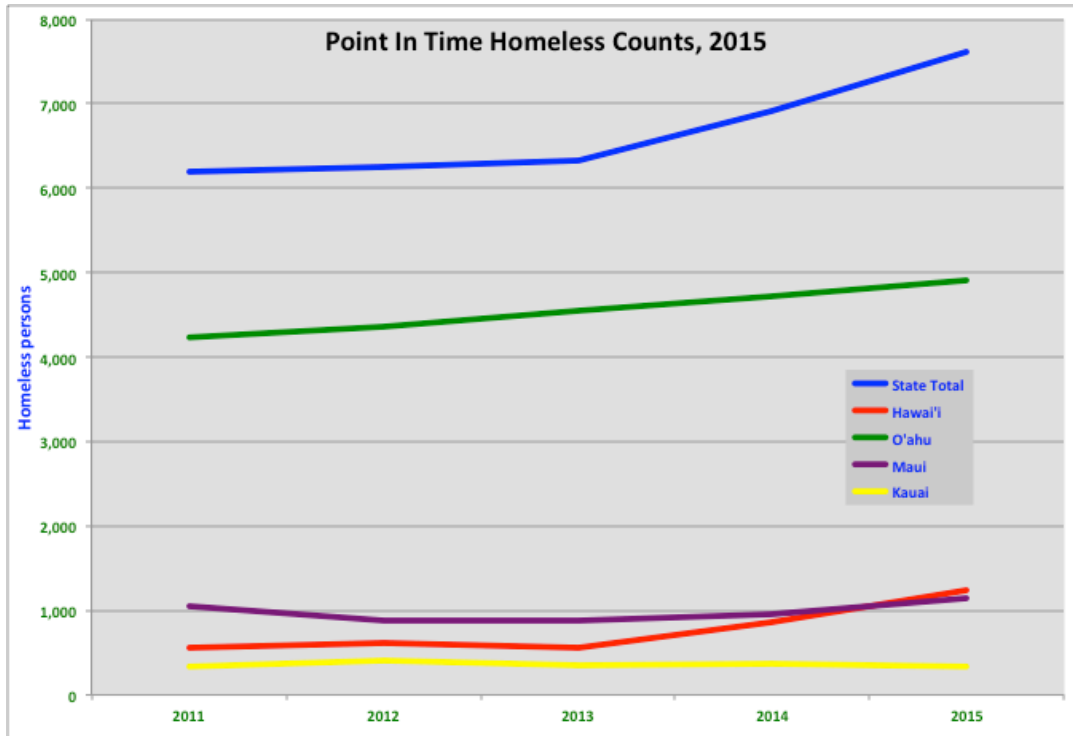
Homelessness is a severe concern in Hawai'i that cannot be dismissed, and one which complicates food access immensely. In 2016 the state had the second highest homelessness rate in the nation.² The state suffered an 11-percent increase in a single year, from 2010 to 2011. Nearly half of the homeless population are children, and two thirds have lived in the state more than 12 years (Lee 2012, 13). The issue is especially poignant given the obvious wealth enjoyed by so many residents and tourists — homelessness is a condition that is essentially caused by high housing costs and the limited inventory of affordable housing.

One report suggests that only one in three people experiencing homelessness require long-term, supportive services (Hawai'i Appleseed, 2016). Most homeless people, the report argues, would require fewer services if given access to affordable housing. This is one of the reasons why "Housing First" programs are being implemented by various relief organizations in Hawai'i.

² United States Interagency Council on Homelessness counts 553 homeless people in Hawai'i per 100,000 population, second only to the District of Columbia. <https://www.usich.gov/tools-for-action/map/>

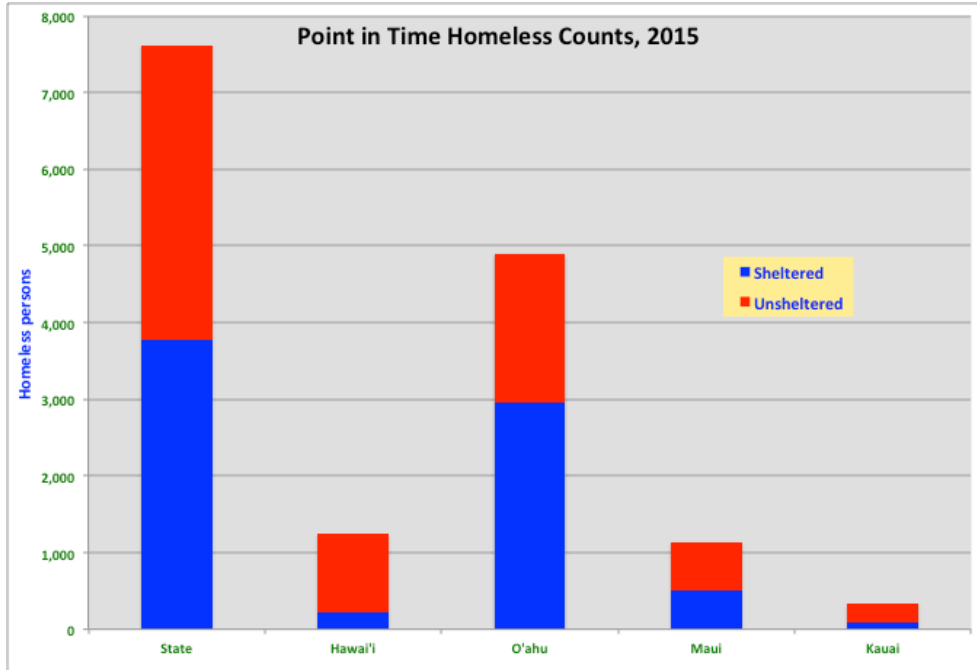
Conditions are most extreme on Hawai'i Island, where, in 2015, 82% of the homeless population was unsheltered (See Chart 1) (State of Hawaii, 2015). Both the “homeless and sheltered” and “homeless and unsheltered” counts are considered low estimates, given how difficult it can be to identify encampments, particularly among people in more remote areas who have no fixed location. Yet the organizers of the point-in-time study attribute rising rates of homeless to an increase in efficiency and effectiveness of implementing the point-in-time count program and not due to an actual increase in homelessness (See Chart 2) (State of Hawaii, 2015).

Chart 1: Point-in-Time Homeless Counts, Hawai'i



Source: Hawai'i Department of Human Services, 2015

Chart 2: Sheltered and Unsheltered Homeless Counts



Source: Hawai'i Department of Human Services, 2015

Homelessness clearly contributes in special ways to food insecurity. While one may be better able to pay for food if one is not shouldering housing costs, the obstacles to eating well are legion if one does not have a place to prepare meals or cooking utensils. Nor can a one store food for later use. This places homeless residents in the position of identifying low-cost sources of food, such as the People's Open Markets on O'ahu, or seeking out food pantries.

As shown below, The Food Basket in Hilo goes to great lengths to assist homeless people, many of whom camp in remote locations off the grid. Having no permanent address makes it exceptionally difficult to apply for benefits, and even those who receive food relief items may only be able to accept packaged foods that do not require refrigeration.

Living with Food Insecurity: How Do Low-Income People Find Food?

Given the diverse population and varied island microclimates, and with the unique economic conditions that have been created by Hawai'i's separation from other populations, food access varies considerably across the Islands. Similarly, community-based initiatives to address food access and hunger are also diverse and unique. Some impressions are offered below.

Maui

Lynn Curtis, Director of Agency Relations for the Maui Food Bank, which distributes more than 1 million pounds of food through some 120 agencies on Maui, Moloka'i, and Lāna'i, noted that recent closings by the last remaining sugar plantation had laid off 300 workers, who now depend on food pantries for meeting their basic needs. "They will have to line up for food after twenty years of working in the fields," she lamented. Yet that was not all – another 200 workers lost their jobs when a hotel shut down.

Curtis also noticed a rise in homelessness, and noted, as have many food banks, that even the working poor depend on food donations. “People come in at the end of the month, when their food supplies are gone.” She remarked that, as on the other islands, there is a substantial influx of Micronesians, “We are getting huge numbers who have huge needs. Often they have few skills and can’t compete in this economic climate.”

Kaua'i

On Kaua'i, the Christ Memorial Episcopal Church food pantry reported that the number of people served has increased gradually from 400 to 600 per month. Operations manager, Cathy Butler, added that the pantry is only two years old. She launched the pantry because she “was struck by the number of people coming to the church office hungry.” Now the church is planning to add new freezer and storage space so it can keep up with demand.

Most of those who come for food to this pantry, she further noted, are originally from the North American continent. They are folks who came to Hawai'i thinking they could lead an easy life on the beaches, but found there were few jobs to sustain them. Many, she added, come with mental disabilities, or have diminished capacity due to alcohol or drug use.

Homeless populations are served by many pantries, but serving these customers also poses special challenges. A second pantry on Kaua'i attracts mainly clients who originated on other Polynesian Islands. Using space donated by the United Christian Church in Lihue, Pastor Avanele Kalalau welcomes community members, including homeless people. Since they have no homes, and therefore no place for storage, the standard allocations of government food bring limited relief. To address this reality, this pantry opts to feed its clients entire meals.

Our sources across the Islands reported that food bank clients are predominately current or previous farmworkers, their descendants, or are recent arrivals from the North American continent.

Hawai'i Island

The paths that lead to food pantries are complex. Many military veterans who have become ineligible for regular military benefits settle here. Many eke out a living by squatting on remote plots of land lacking utility services. Off the grid in more ways than one, they are deeply dependent on food donations from the Food Basket in Hilo.

Yet many of those who live in Puna, whether displaced veterans or not, have to overcome significant barriers. The Department of Health has determined that water collected by Puna residents in catchment tanks cannot be considered potable water. Many Puna residents have no transportation, so to get to a pantry they must walk from their simple shelter or tent as many as ten miles each way to get to a town. One DOH official said he has seen people walking while wearing a backpack, pushing a stroller with children (or groceries) inside, and carrying two plastic bags, all at the same time. Others hitchhike.

In East Hilo, 61% of the residents receive public assistance — ten times the rate for Hawai'i Island as a whole. Federal Census data show that \$17 million of public assistance is given to 3,665 Hawai'i Island residents. That amounts to \$4,584 per person per year. Further, Federal Census data show that 26% of the population on Hawai'i Island has no health insurance (United States Census Bureau 2015).

A pantry in Kailua Kona, located at The Friendly Place emergency housing shelter, closed late in 2016. While The Friendly Place offers homeless people a place to gather, take a shower, wash laundry, and

locate social services, it does not offer food relief, so it had partnered with a food pantry that operated next door. However, the pantry building's owner has decided to pursue a different use of the building.

Moloka'i

The Island of Moloka'i has a population of only 7,300 people, but its remoteness creates special difficulties and opportunities. As WIC Coordinator Mokihana Spencer explained, "The cost of living is very expensive here," since most goods are imported by barge from Honolulu and there is no major urban center that would attract shipments at larger scale. Yet incomes are low. "The majority of the people on the Island are low income," Spencer explained. This leads to clear challenges. "Not all families have a kitchen," Spencer added. "Some cook in the backyard. When we give food donations we cannot assume that they have a refrigerator available. People are accustomed to eating canned corn or beans, and don't always opt for fresh produce."

All told, however, Spencer considers transportation to be the primary obstacle, "especially for kids." The Island has limited public transportation, again because the Moloka'i population is so spread out.

There is only one large employer, Monsanto, whose 200-300 employees tend genetically modified (GMO) seed corn. Prices at local groceries are higher than in most of the Islands. A farmers' market operates each Saturday in Kaunakaki, but the available produce is seldom grown on a Moloka'i farm — many items are way out of season and are displayed in crates that appear to have been purchased at a larger grocery store for resale.

Still, this austerity creates other possibilities. Spencer said, "Our community has access to some locally grown food. They are not able to afford purchasing at the stores, so people share with each other." A network of gardeners has begun saving seed to trade with each other, so that seeds do not need to be purchased every year. Many residents are interested in planting canoe crops, but find that allocating time for tending these pursuits is difficult given the demands of the workday.

CTAHR Extension agent Glenn Teves told us that many families rely on hunting wild deer, which are plentiful. Many families also fish during summer months when the ocean is not as rough. A previous survey of Moloka'i residents found that 76% of respondents think that subsistence gathering is very important or somewhat important to their own families. The survey also estimated that upwards of 40% of Hawaiian families' food is acquired through subsistence activities (Akutagawa, Han, Noordhoek, & Williams, 2012)." Some observers, however, feel the actual percentage is closer to 20%.

Lāna'i

Of course, the Island of Lāna'i is an even more unique environment. It has 3,500 residents, but 97% of the property owned by Larry Ellison, founder and executive chairman of the software firm Oracle. Since the Island has largely been owned by a single entity (first Castle & Cooke, and then a Japanese investor) since 1922, it holds a legacy of central ownership.

Two-thirds of the residents are Filipino, Hawaiian, or Japanese, primarily pineapple plantation workers or their descendants. Federal Census data show that 28% of the population of Lāna'i City lives below the 185% of poverty level. However, only 6% of city residents collect SNAP benefits. All of these SNAP recipients are Asian, according to the Census (United States Census Bureau, 2015). There are five food pantries on the Island: Lāna'i Union Church, Lāna'i Youth Center, Maui Economic Opportunity Inc., Sacred Hearts Church, and Women Helping Women. All are supplied by the Maui Food Bank.

The Chief Operating Officer of Pulama Lāna'i, Curt Matsumoto, offered recollections from growing up on a plantation. "I have a feel for plantation life. Some people romanticize the plantation era, but conditions have changed. We now have diabetes, and the declining health of the student population." Increasingly, he said, seniors need attention. "We can't recreate the 1950s. We will have to use different measures of progress."

Matsumoto added that in the height of the plantation era, the Island had several small businesses that served a population of 2,000 — a clothing store, a dry cleaner, a shoe store, shoe repair, and a jewelry store. Reflecting on current service and retail businesses, he asked, "How many stores cater to residents rather than to tourists?" By his estimate, "close to 100%" of the food people eat on Lāna'i is shipped in.

Matsumoto pointed out that the corporation's strategy is to invest heavily in renovating the luxury resort on the Island, hoping that by attracting more people to stay there, more jobs will be created. The resort is the main employer on the Island. After incomes are raised, he said, Pulama hopes to become a model of sustainable food production, primarily for on-island use. Clearly the easiest potential market for Lāna'i-grown produce to tap would be the resort. Yet supplying tourists with spending money would not in itself feed island residents.

O'ahu

Our field research in August brought home, in visceral ways, the lack of support for low-income residents. In downtown Honolulu, we visited a food pantry where dozens of residents had lined up as early as 5:30 am, our hosts told us, to wait for a food distribution that would not begin until 10 am. In a semi-sheltered space, 250 chairs were lined up in strict rows so people could wait their turn. Small groups sat scattered among these chairs, conversing softly and easily. It was clear that those gathered at Feeding Hawai'i Together welcomed this as social time and a chance to talk story.

However, the director of the pantry in Kaka'ako, Charlie Lorenz, told us he would have to close the pantry at the end of the year, shutting off the supply of more than 3 million pounds of food for 57,000 low-income Honolulu residents, mostly seniors (Nabarro, 2016). This is one fifth of O'ahu's food bank clients. The pantry did in fact close in December, 2016.

Compact of Free Association (COFA) Immigrants

Citizens of the Compact of Free Association (COFA) islands in the Pacific (those who stem from Micronesian islands of Yap, Chuuk, Pohnpei and Kosrae, the Marshall Islands, and Palau) also face special concerns. Our sources said that there are some 50,000 COFA residents now living in the state, mostly on O'ahu, Hawai'i Island, and Maui. Many come to the US to escape a lack of economic opportunity at home, but find new opportunity is elusive. Many become ill eating the foods that are widely available in Hawai'i, including well-intentioned relief donations. Many become homeless.

Mercy Nakayama, Fiscal Specialist for Hui Malama in Hilo, said that some of the difficulties COFA citizens encountered started in their homelands. As reparations for the radioactive damage inflicted on the people when the US government tested atomic bombs during and after World War II, COFA citizens have been granted free medical care and USDA food relief. While still at home, many people abandoned their traditional fishing and farming practices as food handouts became easy to procure.

When these immigrants travel to the US, they are not able to access many benefits, including SNAP, since they are not citizens of the US. Many cannot obtain a social security card unless a relative who

already holds one vouchers for them. This makes it hard for the new arrivals to establish themselves by hampering their ability to earn income.

Nakayama described how many of these new arrivals find the cultural shift difficult. In their homeland, everyone knows each other and people share freely with each other. When these immigrants land in Hawai'i, they find they are now expected to fend for themselves. Many face intense discrimination.

Special dietary challenges also await here. Studies performed by the University of Arkansas for Medical Sciences researcher Nia Aitaoto and her colleagues at the University of Iowa show that “A lot of Micronesians cannot digest raw vegetables” (Interview with Aitaoto). Traditionally, many types of vegetables are cooked. This may mean that well-intentioned advice from US dieticians suggesting people eat more raw vegetables is inappropriate. Eating processed foods and refined sugars, many pick up diseases, such as diabetes, that they did not encounter while eating their traditional diets.

Aitaoto added that, in her experience, the best way to establish connections with the COFA community is through churches, where many in the community gravitate. “Some eat half their meals at church gatherings,” she added. “Often, 80% go to community health centers (such as KKV) for their primary health care.”

State-Provided Food Assistance

The Federal response to poverty and food security is the provision of a variety of food assistance programs: Supplemental Food Assistance Program (SNAP, formally called food stamps), Woman Infants and Children (WIC), and Free and Reduced School Nutrition programs.

Other federal programs targeted to low-income residents include the following:

Table 3: Federal Food Programs Targeted to Low-Income Residents In Hawai'i

Program	Number Served	Budget
National School Lunch Program	109,000	\$45,000,000
School Breakfast Program	38,000	\$11,700,000
Summer Food Service Program	5,800	\$469,000
Child and Adult Care Food Program	11,300	\$6,700,000
Women, Infants, and Children	30,117	\$19,000,000
Fresh Fruit and Vegetable Program	73 schools	\$1,900,000
Commodity Supplemental Food Program	571	\$281,000
The Emergency Food Assistance Program		\$1,800,000

Source: Food Research and Action Center, *Profile of Hunger, Poverty, and Federal Nutrition Programs (2015)*; USDA Federal Nutrition Service. *The State of Hawai'i also gives \$52 million of Temporary Assistance for Needy Families benefits, in part funded by federal block grants. Adapted from Hawai'i Community Foundation 2016.*

SNAP

SNAP is one of the most important programs in the fight against hunger. Table 4 shows how these SNAP coupons are allocated across the Islands. Ironically, food stamp use is highest on the very islands where the most farmland is located.

Table 4: SNAP Receipts by Island, 2014.

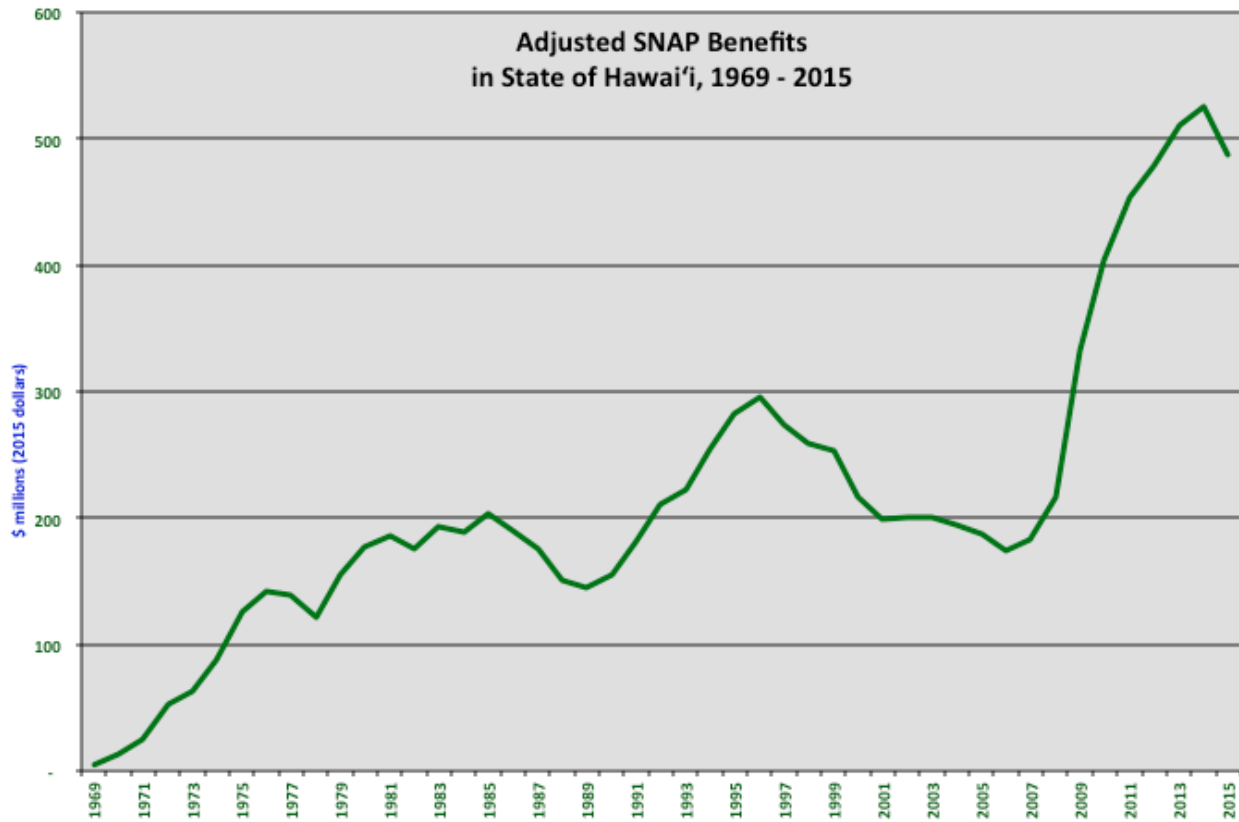
Source: Bureau of Economic Analysis.

	\$ millions
Hawai'i Island	134
Kaua'i	27
Maui, Lāna'i, Moloka'i, & Kalawao	67
O'ahu	297
State of Hawai'i	525

As Chart 3 below shows, Hawai'i residents collected \$487 million in SNAP benefits in 2015 (Bureau of Economic Analysis), down from a peak of \$525 million the year before. These benefits were received by one of every seven people living in the state — 188,895 people in 95,545 households.

SNAP receipts rose dramatically during the global housing finance crisis of 2008. Before this, Hawai'i residents collected only \$217 million of SNAP benefits. O'ahu and Hawai'i Island lead the way, both in the total amount of benefits (O'ahu) and per capita benefits (Hawai'i Island).

Chart 3: Adjusted SNAP Benefits in Hawai'i, 1969 - 2015



Source: Bureau of Economic Analysis

A recent study by Mathematica Policy Research states that SNAP participation rates rose from 66% in 2012 to 83% in 2014 (Cunningham 2017)³. This places Hawai'i at a rank of 33rd among all states for SNAP participation rates. Seven states are estimated to have signed up all eligible recipients. The lowest participation rate is 59%. The US average is the same as Hawai'i: 83%.

Enrolling all qualified citizens in SNAP could be a significant economic opportunity for the State's economy. SNAP recipients currently receive nearly \$500 million in benefits each year; the Hawai'i economy may gain as much as \$100 million each year by signing up all those who are eligible. The Center on Budget and Policy Priorities calculates that every \$1 of SNAP assistance generates \$1.70 in economic activity (Center on Budget and Policy Priorities, 2015), so this could mean an overall benefit to the state of \$170 million.

Several of our sources stated that the Department of Human Services could more efficiently and effectively sign up low-income residents for SNAP benefits. Some suggested that application forms were unnecessarily long, and others complained about long waiting lines at the DHS offices.

³ This conclusion is based on a statistical estimation method called the Empirical Bayes Shrinkage method.

DHS officials agreed that more needs to be done to sign up SNAP recipients. SNAP Administrator Pamela Higa (Higa 2016, 2017) pointed out that “SNAP is funded 100% by the federal government and adheres to laws and policies established by them. The State administers the program under the oversight of the federal government.” She added that “SNAP enrollment is difficult in Hawai'i for many reasons. Many immigrants who meet income standards may not be eligible because they do not meet the non-citizenship eligibility requirements established by the Federal government. Others who wish to enroll for Able Adults Without Dependents have to complete a three-month waiting period before submitting an application.”

Higa added, “We agree that completing an application is time consuming and are working toward an integrated application that will reduce the amount of information requested.” She said SNAP application processes are hampered by an antiquated computer system used by all state agencies. Currently, the system does not allow for people to file online. Higa added, “Applicants can mail, fax or walk in their applications. Application forms are available on the DHS web site.” She said the state's computer system will be upgraded over the next several years.

The first week of each month is the most difficult, Higa noted, because offices are flooded with extra applicants. Many recipients who have failed to file necessary reports find their benefits lapse at the end of a given month, and then come in early the next month to reapply. Still, she continued, staff do give people who wait in line an estimated wait time so they can plan accordingly. Some make appointments for a future time. New procedures allow a person to interview with DHS officials by telephone as well.

Despite the difficulties named above, Higa said the agency has increased enrollment from 93,965 average clients in 2008 to 179,138 in 2016,⁴ and the agency enjoys a 97% rate of processing applications on time, above the required standard of 96%. Higa emphasized that applicants are generally enrolled within 30 days, and expedited processing can reduce this to seven days. Some applications are processed on the same day the application is made, she added. Yet staff at The Food Basket told us that despite these efforts, the need for SNAP benefits continues to rise.

Ultimately, Higa added, “DHS places great emphasis on coordinating with a number of community partners such as The Food Basket (SNAP Outreach Provider on the Big Island), and Helping Hands (SNAP Outreach Provider who coordinates, trains, and distributes materials to agencies who refer individuals to SNAP as part of their normal agency services) to assist in enrolling eligible recipients.”

Other observers added that some nonprofits have set up laptop computers at pantries and other sites where low-income people gather, to expedite the application process by at least accumulating the required information into a single file.

In January 2017 meetings, representatives of The Food Basket and The Kohala Center met with DHS officials to explore how best to expand enrollment. All agreed that further collaboration was important.

James Li of Helping Hands cautioned, however, that simply enrolling more people will not solve access issues. “We could sign people up all day and it would not [solve access issues]. We have a huge COFA (often called Micronesian) population that is not eligible to receive benefits. Moreover, people often drop out of benefits they are entitled to, and go back on the streets.”

⁴ It is difficult to know to what extent this is simply due to an increase in demand for SNAP benefits, and to what extent this reflects improvement in DHS procedures.

Li added that food access should also be considered in relation to larger issues. “Housing concerns trump SNAP access. There is a severe scarcity of affordable housing. Emergency shelters are at capacity. There is a population that is comfortably homeless, but access to housing is still the primary concern.”

WIC

Another key program for low-income residents is the Women, Infant and Children (WIC) program designed to provide supplementary food to families with young children. WIC receipts add up to a significant statewide value, even though individual recipients only collect \$8 to \$11 in cash vouchers each month to supplement their food budgets. When combined with standard food packages,⁵ each recipient receives an average benefit of \$53 per month, or \$636 per year. Total WIC food benefits for the state were \$19 million in both 2015 and 2016.

Community Based Interventions

Where the market and public policy fail to provide enough for people to get by, the nonprofit sector and the good will of communities steps in. These efforts are generally referred to as the “emergency food system” or “emergency food relief,” yet anyone close to these efforts knows that the majority of people seeking assistance are experiencing chronic hunger.

Serving low-income residents on these diverse islands, with their varied needs, falls to the four food banks in Hawai'i, that are loosely affiliated as the Hawai'i Food Bank Network. The largest, the Hawai'i Food Bank, distributed nearly 13 million pounds of food to 287,000 O'ahu and Kaua'i residents in its most recent fiscal year, including 3.8 million pounds of produce. One third of the food distributed by the Hawai'i Food Bank was donated by food retailers; another 30% by food manufacturers; 15% was purchased by the food bank; 14% was provided by USDA; the remaining 7% came from community food drives.

Other members of this network include: The Food Basket on Hawai'i Island, which distributes 1.5 million pounds of food at 68 sites [Sites listed in Appendix A] and has launched a number of innovative food projects; the Maui Food Bank, which donates one million pounds of food to about 10,000 people on Maui, Moloka'i, and Lāna'i, partnering with 120 agencies across the three islands. Director of Agency Relations Lynn Curtis notes that this makes the food bank the largest nonprofit in Maui County.

A second food bank in Lihue, the Kaua'i Independent Food Bank, lists \$410,766 in food donations as of 2014 (no more recent annual report is available at their web site), and operates independently of the Hawai'i Food Bank on Kaua'i.

All told, 287,000 Hawai'i residents received assistance from food banks in 2014. This is one of every five residents. 41% of these recipients are members of working families; they received a combined total of 12 million pounds of food in 2014.

Another O'ahu organization, Aloha Harvest, gleans 2 million pounds of prepared food from restaurants and grocers and distributes to social service organizations, which then give the food to low-income residents.

⁵ <https://www.fns.usda.gov/wic/wic-food-packages-maximum-monthly-allowances>

The food relief system is currently designed to provide about three days' food, or fifteen meals, once each month as an "emergency" allocation. This portion is neither nutritionally balanced nor adequate. Several clients roam to different food banks, pantries, and meal sites during each month, picking up donations as they can from several sources.

Following Feeding America's procedures, food banks and emergency food assistance systems estimate the annual food needs of people experiencing food insecurity at 234 pounds of food per person per year (though this would not be an adequate diet, either). Given the various income levels associated with food insecurity, as outlined above, the total need for "emergency" food assistance is outlined in Table 5. Hawai'i recently expanded eligibility to include people who live below 200 percent of poverty level.

Table 5: Estimated Annual Need for Food Assistance Based on 2014 Population Levels

	@100% FPL	@185% FPL	@200% FPL	
Hawai'i County	35,848	65,003	69,723	people
	8,388,432	15,210,702	16,315,182	lbs of food
Honolulu County	92,129	199,233	220,114	people
	21,558,186	46,620,522	51,506,676	lbs of food
Kalawao County	12	17	17	people
	2,808	3,978	3,978	lbs of food
Kaua'i County	7,920	17,015	19,761	people
	1,853,280	3,981,510	4,624,074	lbs of food
Maui County	17,843	39,843	44,472	people
	4,175,262	9,323,262	10,406,448	lbs of food
State Total	153,740	321,094	354,070	people
	35,975,160	75,135,996	82,852,380	lbs of food

Source: Federal Census American Community Survey, 2010-2015

Assumes that average cost of each meal is \$3.10 (calculated by Feeding America) and that each recipient obtains 15 meals per month. FPL means Federal Poverty Level.

Sources of Food for Relief

Donations

The main sources of donated food to the Hawai'i Food Bank are grocery stores and food manufacturers. Indeed, historically, food banks have served a vital role in handling surplus food items from these two sources, diverting them to hungry people rather than discarding them in a landfill. Thus, a bakery inside a grocery store might place its unsold bread items into a box at the end of the day, and give these products to a local food pantry or food bank, so that the store shelves can be filled with fresh product the next morning. Often, canned goods that are nearing the expiration date are still quite safe to eat, and are donated to a pantry so that the store can restock with newer items.

However, Lynn Curtis noted that the quality of food donated was not ideal. "We get too much soda, chips, marshmallows, and candy. We receive whole pallettes of cranberry concentrate. But we need more rice and more proteins. We should be giving out the best food possible to those who are undernourished, with lots of leafy greens."

Curtis also noted (as most pantries noted) that her customers don't always look for these preferred items. "We have to give foods that are culturally acceptable. A lot of our customers want Spam." This item was easy to find on the food bank shelves.

Relying upon grocers and manufacturers as primary sources of food, in a state that imports 85% of its food supply, means that food banks are also distributing food that was often grown and processed off the Islands. Substantial shipping and energy costs are thus embedded in the value of food donated to low-income residents of Hawai'i.

In a state that consumes about \$8 billion of food each year (this includes \$5 billion spent for eating at home and another \$3 billion spent to dine out), food manufacturers in Hawai'i have total sales of \$538 million and hire 3,000 workers (Bureau of Labor Statistics 2015). Thus, it would seem that very little of the food manufactured in the state is given to food banks; rather, much of the donated food must be shipped from the North American continent or other nations.

Purchases

Food banks are increasingly purchasing food items to donate to recipients. This occurs for several reasons. For one thing, the old model under which food banks accepted surplus food items is breaking down as manufacturing processes have gotten better at reducing surpluses. Food banks also have further reasons to purchase food items. First of all, they gain greater purchasing choice when they are buying, rather than waiting for donations. Second, many food banks nationally have begun to realize they have a responsibility to purchase food from local farmers, as a way of keeping farmers out of poverty, but also as a way of building local food trade in their region.

While many food banks in Hawai'i purchase directly from farms, The Food Basket has adopted some of the most innovative strategies for doing so. For the Senior Produce program on Hawai'i Island, Claudia Wilcox Boucher of The Food Basket has purchased food items from local farms for eight years. At this point she buys from 11 farms on the Island. "I buy Grade A produce and pay market price for it," she said, because she is competing with stores like KTA and Safeway, and hotels on the Island, who buy from the same farms. "Yet it is getting harder and harder to find," she added, as farms have gone out of business. One of the Island's larger banana farms went out of business, and this hampered The Food Basket's ability to purchase food. Moreover, this same farm diverted production to marijuana, a higher-value crop, and this further challenged supplies of food for relief. Similarly, OK Farms sells rambutan to The Food Basket, but not in enough quantity to keep the farm from considering pulling out these trees and planting higher-value crops.

Currently, Wilcox Boucher said, she mostly purchases tomatoes, zucchini, bananas, papayas, and mushrooms. Root crops (such as sweet potatoes and ginger) and vine-grown cucumbers are also becoming easier to find. As production increases, she wants to purchase more taro and taro leaf. She sometimes obtains string beans and carrots, but notes these are often harder to accept because of the labor involved in preparation. When supplies are sufficient, she will divert some of this produce to CSA program the food bank operates, or to local pantries.

She was quick to add that when she purchases from a local farm, she does so out of a sense that the farm has connected itself to the food bank in a more immediate way, and is not simply looking for a commercial exchange. One way this is established is that she asks those farms she purchases food from to also make donations separately, as a way of investing in the relationship. These donations may well

be second-quality products that did not hold a high market value, but are nutritious for recipients.

Gleaning

Some food pantries and food banks also sponsor gleaning programs. When volunteer labor is available, gleaners might be sent into a farmer's field to harvest produce that the farmer does not have time, or staff, to harvest for themselves. This produce is then placed into the donation stream wherever it is needed.

However, gleaning efforts may not be consistent, because the volunteer base is small. Lynn Curtis of the Maui Food Bank noted that "We could get 17 pallets of pineapples from the fields, if people had the time to collect them."

Another gleaning effort is of a different magnitude. Aloha Harvest, based in Honolulu, rescues mainly prepared foods from local retailers and restaurants, donating them to 180 social service agencies on O'ahu. Aloha Harvest is now beginning to rescue fresh foods as well.

Aloha Harvest's executive director Ku'ulei Williams says that in the 16 years Aloha Harvest has operated, it has saved 17 million pounds of food from entering the waste stream. Most of this has been diverted to low-income residents.

USDA Commodities

Food banks also rely upon donations from USDA's The Emergency Food Assistance Program (TEFAP), which funnels surplus commodities to food banks. Often these are staples such as rice or flour. Yet the cranberry growers and other commodity groups have persuaded USDA to purchase massive quantities of their product, so food banks across the US get frequent donations of cranberry concentrate, jellied cranberries, or dried fruit.

USDA parcels out these donations on the basis that each recipient should obtain five days' worth of food once a month. The cost for each of these 15 meals is set at \$3 per meal for Hawai'i, so each constituent receives products valued at \$45 per month. These are intended to be emergency relief supplies, meant to tide a recipient over until their next paycheck arrives.

USDA at times can also make available milk, cheese, meats, and other commodities. These are welcome when they arrive, but many food banks find it is difficult to predict when they will be available. And for food banks serving clients who have no refrigeration, such supplies may be difficult to distribute.

Community Food Drives

All of the food banks also solicit donations from community groups. For example, a student group might collect canned goods during a school hunger drive, and donate the food items to the food bank to distribute. Workers for a given corporation might solicit donations from fellow employees. Many food banks hold special fundraising events to raise money they can use to purchase food.

Forms of Distribution and Access

Food banks and food pantries have devised a large number of ways of distributing food to low-income constituents. Typically, a food pantry might be open certain hours each month, and allow their customers to pick up a package of food items during those hours. Often this package has been readied in advance for the recipient to pick up, or at least has been pre-allocated and the recipient has to pack it up.

Some, such as Feeding Hawai'i Together, like other food pantries on the North American continent, invite customers to move through their warehouse and select the items they want.

Backpacks

However, the pantry model is too limiting for some low-income recipients, often because they have limited transportation. Recognizing that many low-income children only get balanced meals at school, many food banks work through the schools to offer backpacks that have been prefilled with enough food for the child to eat six meals over the weekend. These backpacks are offered to students on Friday and returned empty the following week.

In-school Pantries

Some food banks are also opening food pantries at school buildings. The concept behind this is that many parents are working so hard they do not have time to come to the pantry, but can be reached by catching them when they head to school to pick up their children.

Kid's Café

Maui Food Bank runs a program that offers complete meals to 1,000 children of homeless people each week through the Boys & Girls Clubs and county Youth Centers. This is the only such program in the state at this time.

Direct Delivery and CSA Shares

Some food banks offer boxed portions of food similar to Community Supported Agriculture (CSA) shares. These might include fresh produce items, or processed foods. The Food Basket on Hawai'i Island has launched a program called *Ho'olaha Ka Hua* (meaning propagating fruit) or "Da Box," which delivers shares of fresh produce to recipients, often to a local drop site such as a church or social service agency. Shares cost \$10 per week for SNAP recipients, and \$16 per week for retail customers. The program has been so well liked (adding 40 new customers each month) that many of The Food Basket's individual donors also purchase produce through Da Box program. The Food Basket delivers 115,000 pounds of fresh produce through this CSA program, funneling \$142,640 of income to 55 farms in 2015, and delivering 47 different types of produce to 10 work sites and 31 drop centers.

Foods for Seniors

Food banks and pantries have devised specific programs that focus on seniors, who are especially vulnerable, requiring better nutrition as they age. Often these involve special deliveries of commodities or fresh produce to senior centers.

Summer Meals

The Maui Food Bank and dozens of schools have instituted summer food programs, hoping to reach students in the off-season. Many students rely upon meals at school since food is not always available at home. These summer meals help reach students when school is out of session.

Special Holiday Meals

Many pantries and food banks offer prepared meals for special occasions such as Thanksgiving. In addition to providing food, these gatherings reduce the isolation many low-income people experience.

Disaster Relief

Furthermore, food banks often are called upon to distribute food items to victims of natural disasters, such as hurricanes or volcano eruptions. On Hawai'i Island, when Category 4 Hurricane Iselle decimated the Puna district in 2014 with maximum sustained winds of 140 MPH, The Food Basket coordinated with

a group of local residents, who called themselves the Bodacious Ladies. Together, they organized sophisticated relief, evacuation, and medical care systems for residents who were trapped due to downed trees and powerlines blocking roads and highways in the aftermath of Iselle. This disaster relief effort further gave rise to more permanent neighborhood readiness planning.

Food Banks Face Dilemmas in the Future

In Hawai'i, as across the nation, food banks find themselves caught up in a critical transition. They will need to refashion themselves in the near term. Originally formed to offer low-income residents food that had been considered “surplus” by industrial firms (See Appendix B), the relief sector at times placed the needs of the food industry above the needs of the recipients.

Over time, as the shortcomings of a diet based on processed foods (often with high carbohydrate and sugar content) became clear, and as industrial surpluses dwindled in the face of “just-in-time” shipping, food banks have shifted their focus. They have sought to offer healthier fresh foods, with a strong focus on fresh fruits and vegetables to ensure proper health. Yet this created difficulties for many of the food pantries, which had grown up in church basements or in other spare spaces, where dry-shelf storage was limited, and cooler or freezer space nonexistent.

Simultaneously, an entire generation of food pantry volunteers has aged. For decades, pantries have been led by dedicated people holding a strong sense of mission to serve the poor. They could donate their time because they enjoyed a generous pension or a devoted spouse who supported their volunteer work. Many are now aging out. New younger volunteers cannot count on having such generous pensions, and the nature of volunteer work is changing. Youthful volunteers are plentiful, but they tend to look for a brief (e.g., two-hour) shift; fewer leaders are surfacing who can donate several days each week, week after week.⁶

Moreover, the food bank system was founded on the premise that it was “emergency” food relief to help someone weather a difficult time in their lives. Now it has become clear that poverty is structural and not an individual failing; it is created by potent economic structures and will not disappear soon.

Thus, as long as the economy produces inequality, we will be forced to build a food relief system that is permanent, with permanent facilities for handling food safely at cold temperatures and run by professional staff. This model has yet to be developed, and indeed may be more expensive than society is willing to bear.

To make it more complicated, food bank customers now come to food banks with a broad variety of other needs: for housing, for social services, and for capacity building. Increasingly, food banks are realizing they need to address a host of issues if they are going to empower their constituents to rise out of poverty and no longer remain dependent on handouts.

More Than Hunger: Addressing Food Insecurity and Access

Even generous food donations do not in themselves solve the needs of those who are hungry. Kat Bumatay, SNAP Outreach Specialist for The Food Basket, outlined some of the difficulties the food bank encounters.

Disabilities limit participation. “We served one disabled woman. She lived in a container. She had no

⁶ Based on consultants’ interviews with food bank officials across the U.S.

transportation. She had no place to receive mail so she did not receive official notices. She couldn't read the [SNAP] application forms clearly, so we had to resubmit the forms several times.”

Lack of housing limits participation. For thousands of Hawai'i residents who have no home, or kitchens, or kitchen supplies, it is extremely difficult to obtain regular food. An occasional meal may become available, and one may visit a food pantry, but this does not mean the client has any way to store or prepare the food they might receive. As mentioned earlier, some of The Food Basket's constituents live completely off the grid, with no generators, and no access to ice, so they have no place to store perishable items, and limited ability to cook. In such cases, Bumatay and other staff may spend hours with an individual client, hoping to help them through the difficulties they face. Some will drive food out to someone's home in a personal car to make sure the client can obtain food in urgent situations.

Lack of transportation limits participation. One of the most recurrent themes during our interviews was the lack of public transportation, particularly on the neighboring islands. Running a close second were concerns about the difficulty many recipients encounter when they try to bring food relief items home with them on public transportation — especially if they must walk a long way to or from the bus stop. This limitation has convinced several pantries and food banks to offer delivery services or mobile markets.

Lack of time limits participation. Many low-income people work two or three jobs, and have trouble scheduling a run to a food pantry during the hours it is open.

Lack of skills limits nutrition. Many recipients simply lack skills in preparing food. They might obtain a box of produce and have no idea how to serve it. As mentioned earlier, some find produce an unusual item, and would prefer comfort food such as saimin or Spam. While some food pantries offer cooking classes, some of our sources said these were not always well attended or well received. Many recipients lack the time to attend.

Many food banks also offer classes in a variety of topics such as meal planning, nutrition, gardening, or shopping. Some offer work skills training so that recipients might opt for a more rewarding job. The Honolulu YMCA offers middle-school cooking classes, in collaboration with Daniel Leung of the Culinary Arts Department at Kapiolani Community College, who has written a respected and accessible curriculum called “Cooking up a Rainbow” which covers affordable fresh food and its preparation.

Isolation poses difficulties. Many recipients are simply on their own, often realizing they have little power to shape the important forces in their lives, and often having no peer group that can support them in applying for benefits they might be eligible to receive.

Farmers' Markets Provide Some Access

Statewide, low-income residents make a significant economic contribution by purchasing food at farmers' markets. A 2015 USDA study reported that SNAP recipients spent \$18.8 million in SNAP coupons at the state's farmers' markets (Ashe 2015). This rivals the amount of money that Hawai'i farmers receive in federal subsidies.⁷

⁷ While Hawai'i farms receive very few commodity subsidies compared with other states, the Bureau of Economic Analysis tracks \$286 million of federal payments that were received by Hawai'i farms from 1969 to 2015. This amounts to \$721 million in 2015 dollars. This sum includes \$11 million in 2012 and \$25 million in 2015. U.S. Census of Agriculture data show that 628 (90%) of the 700 farms in the state received \$5.2 million of federal supports in

Statewide, at least 51 farmers' markets accept Electronic Benefit Transfer technology (EBT; this is the same technology that allows any store to process a credit card) (Hawai'i 24/7 2014).

The City of Honolulu has placed strong emphasis on ensuring access for low-income residents, opening 25 People's Open Markets that operate in neighborhoods across O'ahu, for residents and visitors of all income levels. Vendors set up an awning for roughly 45 minutes at each site, then pack up their goods and proceed to a different location, often covering several locations each day of the week. People's Open Market Supervisor for the City and County, David Lee, explained that the city sets minimum and maximum prices for each product that is sold, to ensure that foods will be affordable and vendors protected. This is a striking effort to increase access to fresh foods at affordable prices for those who are the most vulnerable.

While immediate digital exchanges using EBT cards are only available at four of the 25 sites, all vendors are required to accept EBT cards using a paper voucher system at all locations. Lee said that the public has made only limited use of this paper voucher system.

Moreover, while these open-air markets are welcomed as places to buy raw produce items, only a few farmers are actually selling their own wares. Many of the products we saw for sale were packed in wholesale containers. Few were clearly labeled. The City encourages vendors to sell their own produce, yet recognizes there are often a few weeks each year when nothing is being harvested from local farms, and vendors need income every week. As a result, vendors are allowed to supplement their Hawai'i-sourced products with those supplied from other locations. This also makes a wider variety of goods available to the public. We discussed with Lee the possibility that the market could at least require the name of each farm to be posted with each product sold. He said efforts were being made to make the source of the products more apparent to the public.⁸ The City and County's Special Services Section Coordinator Alex Ching added that "all our vendors are required by our rules and regulations to have signage with prices, their farm name, and that they accept EBT. During your visit, they failed to have them up and have since been notified to correct."

Food Banks Build Community Networks

Accordingly, many food relief efforts nationally are dedicating attention to building more of a community context for low-income constituents. The hope is that in breaking down isolation, and

2012. Environmental Working Group's respected farm subsidies database tracks \$115 million of federal payments received by Hawai'i farms between 1995-2014. This included \$59 million of disaster programs, \$37 million of conservation programs, \$17 million of crop insurance, and \$2 million of commodity programs. EWG states that only 3% of the state's farms received subsidies, but this is not consistent with Census of Agriculture data (above). See <https://farm.ewg.org/>. For a visual display of BEA data see Chart 19 on page 72 of this report, Net Income by Type (Adjusted) for Hawai'i Farms, 1969-2015. The State also gives subsidies, often for irrigation systems, pest control, industry development, promotion, and the like that are not included in the above figures. As one example, the Hawaii Farm Bureau successfully lobbied in 2016 for the **Livestock Feed Subsidy Extension HB 1999 HD 1 SD 2 CD 1**. This law established a grant program for Qualified Feed Developers and reimbursements to Qualified Producers for feed costs totaling \$2 million. Another \$2 million were dedicated to invasive species control. Only a fraction of these would involve grants to producers, so they would not show up in BEA data as personal income to farmers.

⁸ Information about the People's Open Markets, including the times and locations of each of the rotating markets, can be found on the website of the City and County of Honolulu Department of Parks and Recreation (www.honolulu parks.com).

offering more ways for low-income residents to collaborate with others, they may feel more empowered to take action to improve their own lives.

One effective strategy food banks have pursued in building community has been to hold gatherings at schools, since low-income people often recognize schools as a place where their kids belong and connect with friends. Moreover, schools are institutions that low-income residents pay taxes to support. Parents feel some ownership and a sense of belonging at schools that is difficult to find elsewhere.

Moloka'i's WIC dietician Kurt Go was the most vocal proponent of this view. "It is critical to partner with school districts in order to have impact." He cautioned, however, that he has learned to avoid calling these "educational" experiences, since this simply turns people off. "We invite people to come have an informal conversation." The most important attractor for encouraging people to attend meetings, he added, was to offer free food. Go also likes the idea of sending a mobile market out to where people live. He has had some success with health fairs. Yet he added, "Offering cooking classes has not been effective. I've seen lots of programs come and go."

Another pantry on Moloka'i, at St. Damien's Catholic Church, calls their gatherings "ohana nights," hoping to foster a sense that all who come are connected to each other. Leoda Shizuma finds that through these evenings, she is better able to maintain contact with entire families, not simply recipients as individuals.

Pohai Kirkland of Kealakehe Elementary School in Kailua-Kona convenes Parent Community Network Center (PCNC) meetings to instill a sense of culture and connection among parents of the children who attend her school. Collaborating with The Food Basket, she distributes free food at some of these gatherings. "My role is to build community, and all that entails for the school," she said. Most of her parents are low-income because they have "low-wage jobs," she said, and work more than one job. About 85% of the students qualify for free or reduced lunch at the school (that is, their household earns less than 185% of the poverty level). Over the long term she hopes to add a food pantry at the school. The school population is about half Asian and Hawaiian, with 16% Micronesian, and a smaller number of Slavic or Latino immigrants. Some 60 languages are spoken at the school. Kirkland herself introduces herself at meetings in her native Hawaiian language and in the customary manner, encouraging others to speak about their own cultural roots as well, and in order to foster a wider awareness of Hawaiian culture.

Kirkland finds that Native Hawaiians, who may expect to be cared for by an extended *ohana* network, seldom take advantage of these donations. The majority of those parents who do are Micronesian, she added.

Kirkland also creates other opportunities for students to learn more about food and how to eat well. She worked with school officials to open up gardens at the intermediate school, and to ensure that grades 3-5 learn about gardening as part of the standard curriculum. Her goal is to harvest enough food that this produce can be served at a community "meet and eat" gathering.

Kirkland's foundation in this work is to nourish a strong cultural taproot that supports healthy living. She notices that our current fascination with advancement and technology has undermined cultural wisdom. "Parents keep their kids way too busy. I call my parents to urge them to limit their kids' use of social networking. We take away critical cultural protocols by resorting to technology. We lose the heart-to-heart talk. In the long term, it will remove our sense of relationship from each other."

She often finds that the requirement to document each interaction can interfere with rich cultural sharing that her gatherings can promote. “I would prefer we didn’t have to keep track of everything,” she said.

Expanded Food Banking Models Mobilize Healthier Lifestyles

Carol Ignacio coordinates a broad set of activity on Hawai'i Island as Government and Community Affairs Manager for the Blue Zones Project — part of a national effort to encourage communities to eat better, exercise more, and foster healthy lifestyles. “We see our role as beginning to mobilize both energy and power collectively,” Ignacio said.

A native of Pa’auilo, Ignacio is deeply knowledgeable about food. She founded The Food Basket in Hilo, and volunteers and invests in Grandma’s Kitchen, a popular café in Honoka’a owned by her son. Ignacio sees growing food locally as critical for the health of the state.

“You can always give SNAP benefits to people, but that won’t mean they eat the best food,” Ignacio said. “There are families that have been poor for generations, and they are accustomed to eating a certain way.” Often this has more to do with comfort than nutrition.

Looking back at her career in food banking, Ignacio concluded that, “We were part of the problem.” By handing out food for free, food banks were failing to foster survival skills. Multiple agencies began to work in low-income communities while failing to empower residents. “We would give money away, but not ask for anything back.”

So The Food Basket created new approaches. “In two sites, we were successful in forming a ‘super pantry,’ ” Ignacio added, where the focus was placed on fostering personal development, not simply handing out food. Each enhanced pantry was open 4 hours per day for 6 continuous weeks. Staff would help clients deal with a broad range of issues such as domestic violence, anger management, and communications skills. People would receive a stipend for the fuel they needed to drive to the site. Childcare would be provided at a nearby place so parents could focus on themselves. “Julia Zee offered cooking demonstrations, and nutrition lessons. We would eat together so people would find fellowship with each other. People really enjoyed building more of a sense of power. The evaluations were outstanding. We experienced real empowerment in most of the women’s lives,” Ignacio added. All but one of the 40 participants graduated from the program. “To this day I meet women who share that this was a game-changer in their lives.”

Thus, the model for the super pantry was to move away from treating hunger as a condition, and move toward efforts to prevent it in the first place. “To do this, we have to impact the system in which people live,” Ignacio said. Offering food now became the vehicle for engaging constituents in focused effort to improve their own lives. “We are moving to a point where food sustainability and food access becomes part of our culture.”

Now in her new role, Ignacio has the ability to raise some of these broader issues. She sees great opportunity to move to a more positive approach. She has formed partnerships with food businesses that pledge to purchase food from nearby farms, and promote healthier lifestyles in a more holistic manner. The first business to become certified as a Blue Zone business was KTA Grocery in Hilo, in part because of its focus on sourcing food locally.

KTA Superstores Thrives on Partnerships

The first supermarket chain on the Islands to become Blue Zone Certified was KTA Superstores. Originating a century ago, the firm has expanded to six locations including Hilo, Kailua-Kona, Keauhou, Puainako, Waikoloa Village, and Waimea. At all locations including its corporate offices, it seeks to promote health and well-being for both its 800 employees and consumers.

For the retail customer, this means enhanced healthy options on grocery shelves, hot lines, and sandwich bars. For employees, Blue Zones Certification includes attention to regular exercise and better eating. Each of the KTA stores has installed a checkout lane featuring healthy grab-and-go snacks such as fresh fruit and nuts, and has added a display featuring fresh produce, highlighting locally grown products. At the corporate office, the firm launched a Healthy Lunch with a Co-Worker program including monthly “salad days.” KTA also established indoor and outdoor walking routes, and hosts health fairs with cooking demonstrations, health screenings, and movement exercises.

KTA Super Stores started in 1916, opening a modest 500 square-foot grocery and dry goods store. Founders Koichi & Taniyo Taniguchi wanted to assist family and friends to obtain grocery and household necessities. Merchandise was often delivered by bicycle. As it expanded, KTA Super Stores attempted to uphold the founder’s philosophy: a commitment to humbly serve the people of their community, “Island Style.”

Gradually, the couple built their pick-up and delivery business into a storefront grocery. By 1940, the family had opened a branch store in downtown Hilo. This proved to be a wise decision when the original structure was destroyed by the tsunami of 1946. The Keawe store was then converted into a supermarket in 1953, with a Kailua-Kona location added in 1959 (relocated to its present location in 1975), the Puainako store in 1965, followed by Keauhou in 1984 and Waimea in 1989. In 1990, a sixth location was opened to serve the community of Waikoloa Village.

Mountain Apple Brand

Two years after the final store opened, KTA decided to grow by featuring its own labeled food items. The sugar industry had begun to collapse, so Tony Taniguchi, then president of the company, directed Executive Vice President Derek Kurisu to more deeply consider KTA’s role in the local economy. One way to foster employment after the last Hawai’i Island sugar mill closed was to foster locally grown foods under the family’s Mountain Apple Brand® label. The family also viewed this as a way to diversify the island’s agriculture, preserve green space, and sustain the aloha spirit and rural lifestyle.

The first Mountain Apple-branded product was island fresh milk, introduced in 1992. Since then, KTA has grown its Mountain Apple Brand® steadily. Interviewed in early 2017, Toby Taniguchi, the current President, referred to the brand as a mechanism to “stay dedicated to vendors and to incubate businesses.” This means the firm offers quite a few special services to its partners. KTA provides each producer or processor annual demand forecasting data, marketing, and packaging, allowing suppliers to scale up and learn how to consistently supply wholesale markets. KTA even encourages suppliers to develop their own branding and labeling, and then expand into additional retail markets. Through this growth process, Toby Taniguchi says, “everyone can win.” Today, some fifty plus local vendors supply over two hundred different Mountain Apple Brand® food products to KTA Super Stores on Hawai’i Island.

Currently products range from fresh milk and eggs, range-fed beef, and island lamb to fresh breads, cookies, coffee and desserts. Now the firm offers fresh island bananas, Waimea-grown fresh vegetables, bean sprouts, and an assortment of pre-cut salads and vacuum-packed vegetables. An ever-growing inventory of unique ethnic food preparations include dried and smoked fish, poi, boiled peanuts, tofu, Japanese “koko” pickled cabbage, ogo and seaweed.

KTA's web site points out that the firm strongly supports the concept of grown-in Hawai'i foods and believes that such a strategy enhances local pride and sustainability. Its guiding principles combine the Hawaiian value of *lokahi*, or working together, with the Japanese principle of *kaizen*, or continuously striving for improvement.

This vision is encapsulated in the “Mountain Apple” name itself. The mountain apple or 'ohi'a-'ai, was one of the twenty-four “canoe plants” brought to Hawai'i by Polynesian voyagers 1,500 years ago.

When asked if he were to brag about one thing, what would he brag about, Toby Taniguchi replied, “If I were to brag, not that I would, I would brag about the company being 100 years old in 2016. We've been able to serve the community for 100 years, 100 years of families and friends serving the community.”

Yet in true Island Style, Toby was quick to add that this is all possible because of great partners in the community.

Farm-to-School Helps Build New Connections

Robyn Pfahl, coordinator of the Hawai'i Farm-to-School Program with the Department of Agriculture, contributed significantly to this profile.

Hawai'i Department of Education (DOE) statistics show that 53% of public school students are eligible for free or reduced-cost meals (DOE 2017). For many of these students from lower-income families, school is the one of the few places where they can obtain a nutritionally balanced meal. Many parents work two or three jobs, so food options at home are limited.

This household food insecurity places high importance on making sure that school nutrition programs offer the healthiest food possible. Yet many students encounter obstacles in accessing school meals. In the past, students had to apply for subsidized school meals, but often this paperwork was never submitted to school officials. In many cases, schools with significant low-income population did not qualify to offer lower-cost meals because not enough applications were turned in. Lacking proper certification, many students faced a choice of packing a meal for themselves, paying cash for a full-priced meal, or going hungry at school, Robyn Pfahl, DOA Farm-to-School Program Coordinator, pointed out.

Luckily, Pfahl added, a federal program, the Community Eligibility Provision (CEP), eliminated the burden of collecting household applications for low-income areas by covering the costs of free breakfast and lunch to all students in schools where more than 40 percent of the student population is “direct certified” (this means that the number of students who live in households receiving federal needs-based programs such as SNAP, TANIF, or FDPIR, or who have special circumstances such as homelessness or are runaways, are verified by the school through public federal data sets without waiting for individual applications to come in).

The rates of federal reimbursement for CEP schools fluctuate depending on the school's direct certification rate and student meal participation, which makes designating CEP schools a potentially risky decision for schools where students don't want to eat school meals, even if it's free. Over the last year, DOE has increased CEP participation from 34 (of 88 eligible) DOE schools in 2016 to 52 CEP schools in 2017. All are able to offer free meals to all of their students, eliminating both the need for cumbersome paperwork and stigmatizing lower-income students who receive free food. This direct link to federal assistance means that increasing SNAP enrollment among households with children could increase the reimbursement rates for schools, thereby amplifying the federal funding that could be spent on local agriculture.

Offering the freshest food possible in school lunch programs suggests increasing the attractability of tasty fresh school meals while increasing the share of fresh ingredients that are grown on the Islands. Yet few Hawai'i farms are in a position to fulfill the needs of a district serving 176,000 children each day, even with the DOE's current menus that do not require many fresh ingredients, Pfahl added. This places the DOE School Food Authority in an awkward position: do they wait for larger farms to be able to supply their needs on a manageable contract, or do they work with smaller growers to help them ramp up production and change the way the state buys food for students?

Addressing this dilemma, the Hawai'i State Legislature committed itself to increasing the amount of locally grown food purchased by the state when by establishing the Hawai'i Farm to School Program with Act 218 (SLH 2015). Pfahl added that her work encouraging schools to purchase from Hawai'i farms stands at the center of building local food systems. As an agricultural economist turned attorney, Pfahl uses her legal acumen to pay close attention to regulatory details and translate these into opportunities. She opens doors as needed, and informs school purchasers what is possible to do under federal and state law.

"DOE schools are serving about 100,000 meals each day," Pfahl pointed out. With this buying power, she wants DOE schools to take a more active role in local sourcing. Her work begins with a single question. "Are we buying food from local farms?" At first, she said, many state officials had difficulty understanding the cost-benefit opportunity and potential impact of focusing tax dollars on locally-grown food. Often resistance to buying local was that "local farms don't have the supply to fill our demand or local is too expensive." Knowing that farms could not produce in larger quantities unless schools began to purchase, Pfahl asked school purchasers to consider buying what local farms *could* supply at market rates, and allow for back-filling the rest of the order from larger more distant growers, ramping up local purchases as supply becomes available and tracking where the food is sourced.

This concept of trying to use whatever is available now places schools in the position of *helping to build the state's local food system*, rather than simply waiting for some investor to launch a large-scale farm where food may grown in sufficient quantity to serve school needs. "We can prioritize locally grown food in our contracts, and that helps leverage federal dollars to increase local markets. This is an opportunity to get more locally-grown food essentially free to low-income families through the school meal programs."

Another obstacle early farm-to-school efforts faced was that schools felt they were required to purchase food at the lowest possible price for a single statewide menu ordering the same ingredients. Pfahl said that schools (as well as hospitals and prisons) can purchase on *best value* and provide flexibility for seasonal items. State purchasers can spend up to 15 percent more to purchase Hawai'i-grown food

under existing law using the Hawai'i Products Preference in the procurement code and USDA's geographical preference. If the school's purchasing policy prioritizes purchasing from Hawai'i farms, then the source of the food becomes part of the proposal evaluation.

Soon, she added, schools should have a better understanding of their local food purchasing opportunities by referring to a Hawai'i Farm to School Toolkit which identifies strategies and gives examples of innovative procurement options such as forward-contracting with specific growers. That is, schools could approach a local farmer to ask them to supply with a specific amount of, say, carrots. The farmer and the school agree on a fair and reasonable price and a quantity to be delivered, and the farmer is paid at delivery.

This offers farmers significant benefits. "Once a farmer has such a contract, they can leverage their guaranteed market to obtain more favorable operation support such as a long-term land lease or capitalization for farming assets," Pfahl said, and this gives them more support for longevity as a farm business. Moreover, they are not limited by the pressure to lock into lower prices, which often is inherent to the low-bid formal competitive bidding process, or a small-purchase lowest three-bids requirement. "Changing the ways that schools buy their food will require trials of these innovative procurement ideas," Pfahl added.

While some public charter schools are making farm to school connections with flexible direct agreements with farmers, Pfahl added. Asking the DOE to restructure how they procure is much more difficult because their centralized procurement policy means individual schools order off a statewide distributor contract, federal commodities, or limited small purchases.

Pfahl continued by saying that the DOE has taken a hard line on food safety by allowing purchasing directly from farms that are third-party certified for implementing Good Agricultural Practices (GAP). "Nationally, not all schools require GAP," she continued. "USDA does not require GAP, but our statewide DOE school system does. It is the buyer's discretion to determine source requirements that meet their desired level of food safety assurance. Concerns like rat-lung worm disease, e coli and listeria make food safety considerations imperative" in Hawai'i, she added.

Producer food safety training to meet buyer requirements is a statewide initiative of the Hawai'i Department of Agriculture through a GAP training partnership with the University of Hawai'i's College of Tropical Agriculture and Human Resources (CTAHR) Extension Agents. The state legislature has also been considering funding subsidies available for farmers who have difficulty paying for an independent third-party certification, which is what most large buyers are requiring.

Pfahl's work also extends into encouraging schools to make more use of what farmers produce in conjunction with state resources investing in technical support with the Kapiolani Community College's Culinary Arts Program. DOE schools offer culinary training under their Career and Technical Education (CTE) programs, and some are forming culinary training centers where a commercial kitchen will be available for the school system to process second-quality vegetables (produce that is nutritious but not attractive) into prepared foods. The utilization of produce that usually doesn't make it to market is a big opportunity to create new markets for state farmers, Pfahl said. "When you are processing produce into sauces, how they look doesn't matter, and it could potentially lower costs for school nutrition programs by internalizing food preparation costs instead of purchasing canned-processed food."

“There are so many market issues we need to address,” Pfahl said. “We should address the entire system when we look at increasing the amount of locally grown food produced, purchased, and consumed.” Accordingly, DOE has launched a new pilot project to evaluate how these systems are working. The Lieutenant Governor’s Farm to School Advisory Group has brought together the Department of Education, Department of Agriculture, Department of Health, and other state and nonprofit stakeholders to assist in the development of this pilot project within the Department of Education. The resulting pilot project drew state-level involvement and community support funding by SNAP-ED funds and private funders dedicated to increasing local food access (‘Ulupono Initiative, The Kohala Center, Kōkua Hawai‘i Foundation, Johnson Ohana Foundation, Dorrance Family Foundation, and the Hawai‘i Appleseed Center for Law and Economic Justice).

The pilot project is located in a small DOE complex North Kohala on Hawai‘i Island. A national expert was contracted to work with the Kohala kitchen team serving three schools (elementary, intermediate, and high school) to develop and cook new menus that students want to eat while increasing purchases of fresh food and assessing the DOE production systems. Pfahl hopes the new menu offerings will give DOE good information to base future farm to school engagement on, while making meals more attractive to students, reducing waste and benefiting student health and academic performance. “Healthy food is not nutritious unless it is eaten,” she added.

DOE is also committed to reworking its data streams to have access to evaluative information. Pfahl said that when she started this position, she asked how much food purchased from the DOE was grown on Hawai‘i farms. “I got such a wide range of answers that we honestly could not verify how much Hawai‘i-grown food we were actually buying.” In order to move forward, the investment in DOE’s pilot project will bring a valuable baseline of local food purchasing for the state. Pfahl hopes to continue working with DOE and other state entities (charter schools and early childhood education centers) to systematically track how much of the federal and state funded school meal program dollars are going to Hawai‘i farmers as the state tries different methods to connect schools with farms and increase the amount of food grown, purchased, and consumed in Hawai‘i.

Historical and Economic Overview of Agriculture and Food Production

As Hawai'i moves toward a more self-sufficient future and attempts to transcend both the economic dilemmas and worldviews inherent to the plantation system, it is important to step back and examine the history of the export-based approaches that became the predominant form of agriculture on islands that had once completely fed themselves. We will learn that the plantation system played a big role in creating today's poverty, which suggests that future agricultural planning and development should pay close attention to long-term consequences.

This history is critical today because many argue that market forces alone should determine which foods are grown and how lands are used. One of the common arguments leveled against community-based food systems is that they do not always offer a reliable return for farmers or investors, while farms that focus purely on commerce have an easier time going to scale and gaining efficiencies.

A second argument is often posed against the idea that Hawai'i should grow food for itself. This view suggests that selling to export markets brings new dollars to the Islands, while production for internal markets does not.

While this report is not the place to address these valid concerns in depth, the historical evidence strongly suggests that these issues have clear answers in Hawai'i: (1) The plantation industry itself was fragile in its early days, and only survived because of public policy, investment, and favoritism; and (2) Unless Hawai'i builds strong commercial networks that cycle money internally, little of the money earned from export commerce will actually benefit communities, perpetuating the development of a dependent under class.

As mentioned above, public authority created the *ahupua'a* system itself. Early plantations relied deeply upon public involvement to shore up a completely untested framework for agriculture that was alien to traditional society, and to build supportive economic and political infrastructure from scratch. Thus, in the future, whether Hawai'i develops a purely commercial agricultural industry or creates community-based food systems, will largely be determined by public policy and investment, not by markets alone. Moreover, the growth of plantations decimated traditional networks and traditions that had enabled the Islands to be self-sufficient. Without building such networks anew, shaped for a new era, it is difficult to assume that Hawai'i can attain self-sufficiency based on current market forces alone.

The First Cash Crop - Sugar

Sugar Appeared Impractical at First

Back in 1836, refined commercial sugar became one of Hawai'i's first cash crops, fundamentally shaping the agricultural landscape and thus affecting the food system for nearly two centuries. A crop that had been imported from Polynesian islands further west and had naturalized, sugar cane (*kō*) offered certain nutrients, and grew vigorously in the Hawaiian climate. Hawaiians typically grew it next to taro fields. Despite its suitability to island growing conditions, the commercialization of sugar was a "precarious endeavor at best before the 1870s" (MacLennan, 50), leading some to ask how this industry managed to have such an enormous and lasting affect on Hawai'i.

After all, “The planters who began formal sugar ventures in the 1840s and 1850s had no experience with the industry” (MacLennan, 83). Original sugar refineries changed ownership multiple times, including the state government in early years. Meanwhile, the sugar industry experienced tremendous upheaval as prices fluctuated. The sugar industry was stabilized primarily through government policy, as described in the following pages.

Sugar Depended Upon Public Land Use Policy & “Foreign” Trade Policy

Critical to the growth of a commercial sugar industry and the demise of *ahupua'a* was the fact that the Hawaiian government under Kamehameha III established private ownership of property. Not only was this set out by the 1840 constitution, but the Māhele of 1848 also privatized waters adjacent to farmland. By 1850, the government had legalized for the first time the sale of land to foreigners. Then the Hawaiian government made loans to planters to help them build their enterprises. It offered a special exemption allowing plantation owners to build their own private wharves to export their products. Such decisions were made by the independent Hawaiian government, albeit under the influence of foreign advisors.

The sugar industry also depended heavily on decisions that were made off the Islands. Hawaiian sugar mills only began to expand exports during the Civil War, as Chart 4 shows, when Louisiana’s production floundered as laborers enlisted in the war effort. Hawaiian exports increased ten-fold. Yet as soon as the war ended, Louisiana cane fields went back into production, and prices plummeted.

Hawai'i exports rose only slowly until planters were able to secure a reciprocity agreement with the United States in 1876. This admitted Hawaiian sugar into the North American continent market duty-free, effectively a 30% reduction in costs. Forty-two new plantations opened in the next four years, and sugar exports doubled in three years (MacLennan, 37, 74, 146). Without this public action, industrial plantations would have developed far more slowly, if at all.

Hawai'i Conforms Itself to Sugar

The industrialization of Hawai'i's sugar industry also relied upon importation of labor. Hawaiian field workers, both women and men, resisted the contract labor system that kept a workforce on sugar plantations for three to five years, under penalty of law (MacLennan, 83). Thus plantation operators wanting to expand exports sought lower-cost labor that was more removed from a community fabric. By 1865, 522 Chinese workers had arrived in Hawai'i. Three years later, a group of 148 Japanese workers arrived on the Islands. Importing labor would have been precarious had the Hawaiian government enforced prevailing labor laws (MacLennan, 111).

Soon after, the whaling trade collapsed, undermining the production and export of food crops such as potatoes, yams, sweet potatoes, pumpkins, bananas, melons, cucumbers, corn, and taro. The displaced work force moved to the plantations. Additional lands and forests were dedicated to the expansion of sugar production.

By the late 1890's industrial agriculture changed a diversified agricultural and trade landscape into one dominated by a single cash crop. The impact was that historical villages diminished in importance. With them dwindled the heritage of care for the *ahupua'a*. “With whole regions specializing in sugar growing, the surrounding Hawaiian villages disappeared” (MacLennan 125).

The US Takes Over

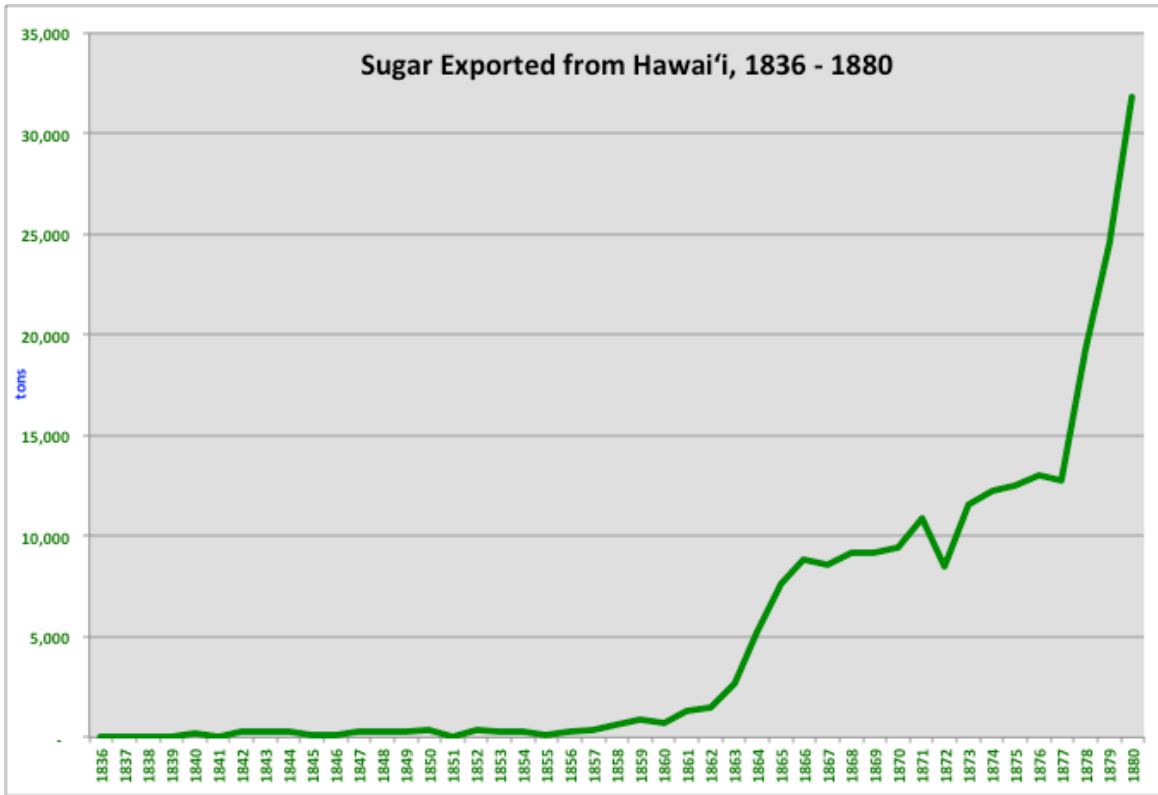
Yet, “in the 1890s, the McKinley Tariff virtually nullified Hawai'i's favored position as a trading partner [with the U.S.]” (MacLennan, 31). The imposition of a new trade tariff by the U.S., even as global sugar prices fell, sharpened the Hawai'i's sugar industry's need for political power. After Hawai'i was taken as a U.S. territory, Hawai'i sugar entered the U.S. market freely again, but the takeover also increased the cost of production. Labor costs rose because the national government outlawed slavery and indentured servitude in its territories. The U.S. also limited plantations to 1,000 acres and limited leases of government land to five years.

Evolutions in technology and irrigation meant Hawai'i “achieved one of the best yields per acre [in the world] at a lower cost” (MacLennan, 41). This resulted in fairly steady sales increases, about \$1 billion per year (when inflation is taken into account) over the next 60 years. When admitted as a state in 1959, the Thrum's Hawaiian Annual boasted, “Hawai'i's sugar industry achieves the highest yield per-acre production in the world” (MacLennan, 31).

Ironically, the quantity of sugar produced peaked in 1966, only seven years after statehood. Sales spiked in 1974, when global commodity price increases fueled a sharp, but temporary, rise in the sugar price. In that single year, Hawaiian sugar producers sold \$3.2 billion of raw sugar (in 2015 dollars), as Chart 5 shows. Yet with the exception of one more spike in sugar prices in 1979, the industry declined steadily after that.

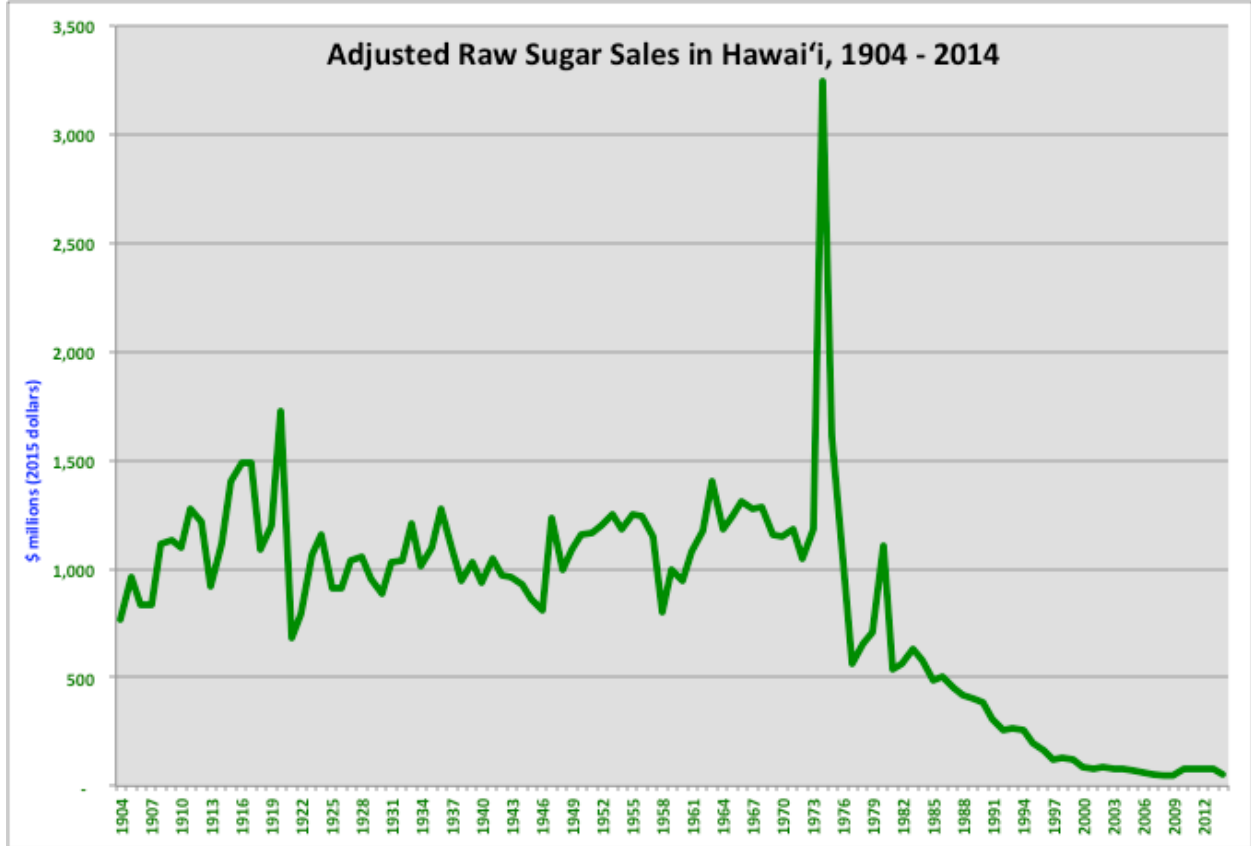
By 1987, higher labor costs and low sugar prices placed a pinch on the industry. Plantations introduced severe cost-cutting measures, and yields began to decline (MacLennan, 247). Sugar's decline was most precipitous on Hawai'i Island, falling from 4 tons to zero over two decades, while production on O'ahu dropped from 1.5 to 0.5 tons over the same period, as Chart 6 shows. Despite its former dominance, the industry has now collapsed. It nonetheless leaves considerable legacy.

Chart 4: Sugar Exported from Hawai'i, 1836 – 1880



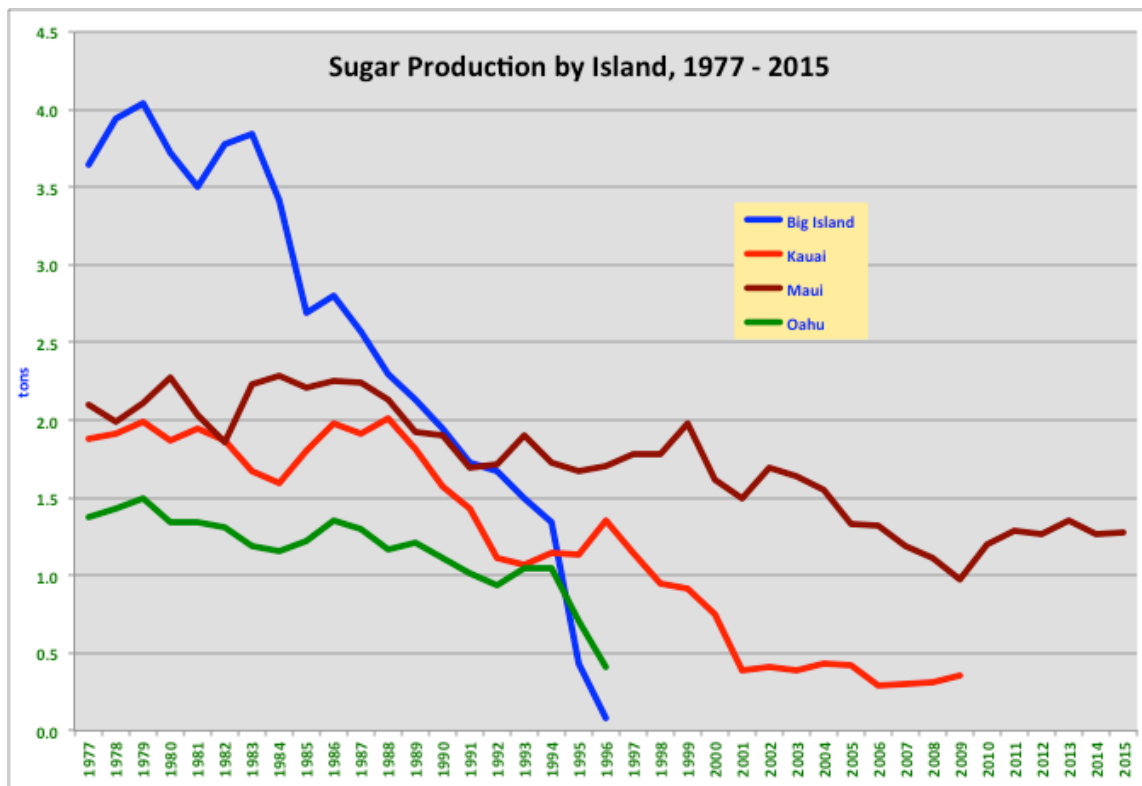
Source: Schmitt (1997), *Historical Statistics of Hawai'i*

Chart 5: Adjusted Raw Sugar Sales from Hawai'i, 1904-2014



Source: Schmitt (1997), *Historical Statistics of Hawai'i* (data from 1904 to 1976); & USDA Economic Research Service (data from 1977 to 2014). **Note:** Data from the two sources are not entirely comparable, so should not be used for detailed analysis, but do suitably reflect broader trends. Value of sugar sales reported by Schmitt is about 1.5 times the value reported by ERS.

Chart 6: Sugar Production by Island (in tons), 1977-2015



Source: USDA Economic Research Service.

An Era of Cash Crops — Pineapple, Coffee, Mac Nuts, and Seed Corn

While sugar was the most important farm product of the Islands for two centuries, other cash crops took hold alongside sugar plantations. While pineapple led the way, coffee and macadamia nuts also helped diversify the plantation economy.

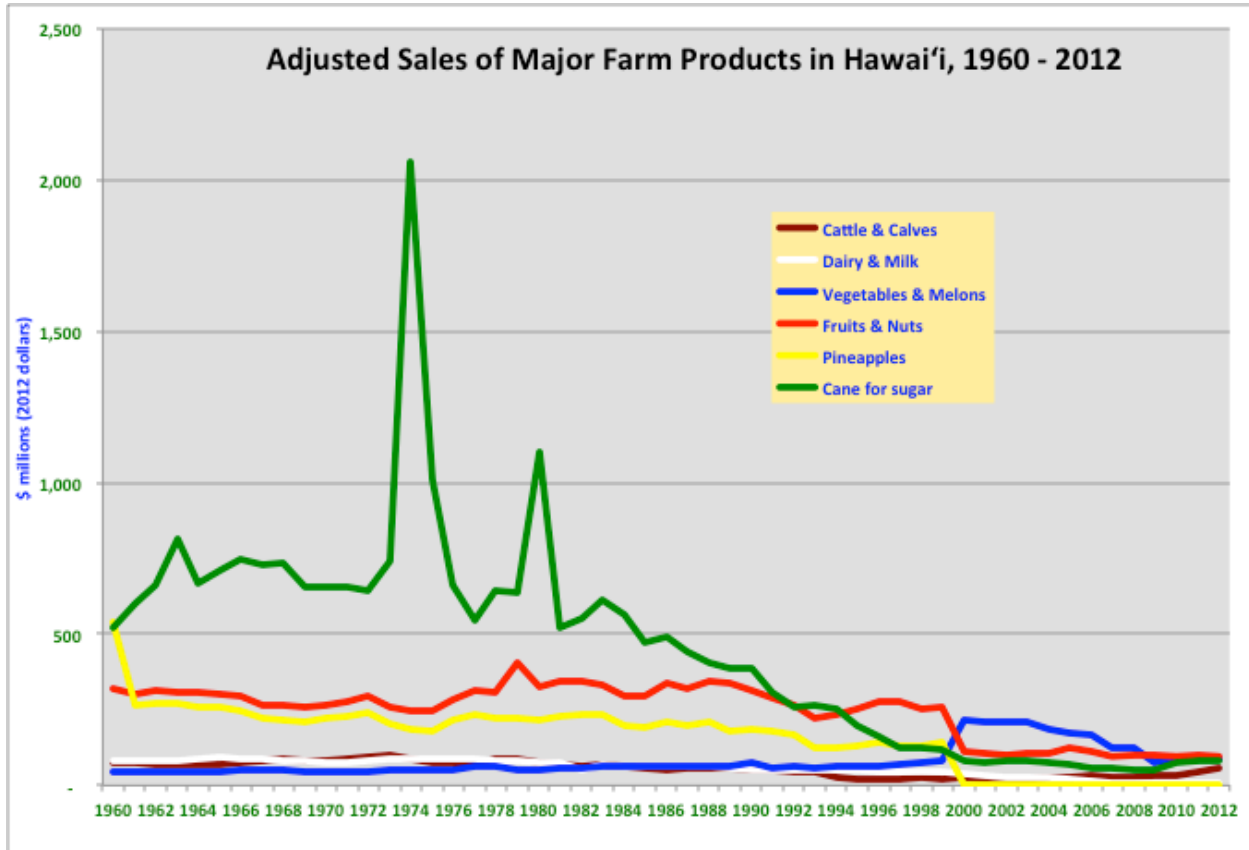
Pineapple

Chart 7 shows that at statehood, pineapple production was similar in value to sugar production, and sales of other fruits were not far behind. Best guesses put the introduction of pineapple to Hawai'i by the Spanish in the early 1800s. The first plantation was established in 1886, coinciding with the development of refrigerated transport vessels, improved canning techniques, and a variety of import tariffs that shifted US imports from the Bahamas to the newly acquired Hawai'i Territory. Pineapple production expanded across lands above 180 meters (600 feet) on O'ahu that were unsuitable for sugarcane production. The pineapple plantations expanded across the Islands, benefiting from the "spillover" effects of a growing sugarcane industry (Bartholomew, Hawkins, & Lopez, 2012).

The pineapple growing and canning industries grew through the early 1900s, faltering slightly around World War II due to a lack of labor, just like sugar. Growth slowed through the 1950s and by the 1960s, the industry was facing intense global competition. Pineapple sales fell \$254 million from 1960 to 1961, cutting sales nearly in half, as canneries increasingly imported pineapple from the Philippines and Thailand at a fraction of the cost of Hawaiian-grown. Shipping costs from Hawai'i to the continental

United States, thanks to the Jones Act, further undermined the industry. Eventually labor costs would make it infeasible to competitively grow pineapple on the Islands (Bartholomew, Hawkins, & Lopez, 2012). Sales eroded steadily until 2000 when they were no longer reported.

Chart 7: Adjusted Sales of Major Farm Products in Hawai'i, 1960-2012



Source: USDA Economic Research Service. Cash Receipts by Commodity. Adjusted to 2012 dollars. Note that ERS data are lower than the data reported by Schmitt for historical sales, used in earlier charts. Overall trends are congruent, however.

Coffee

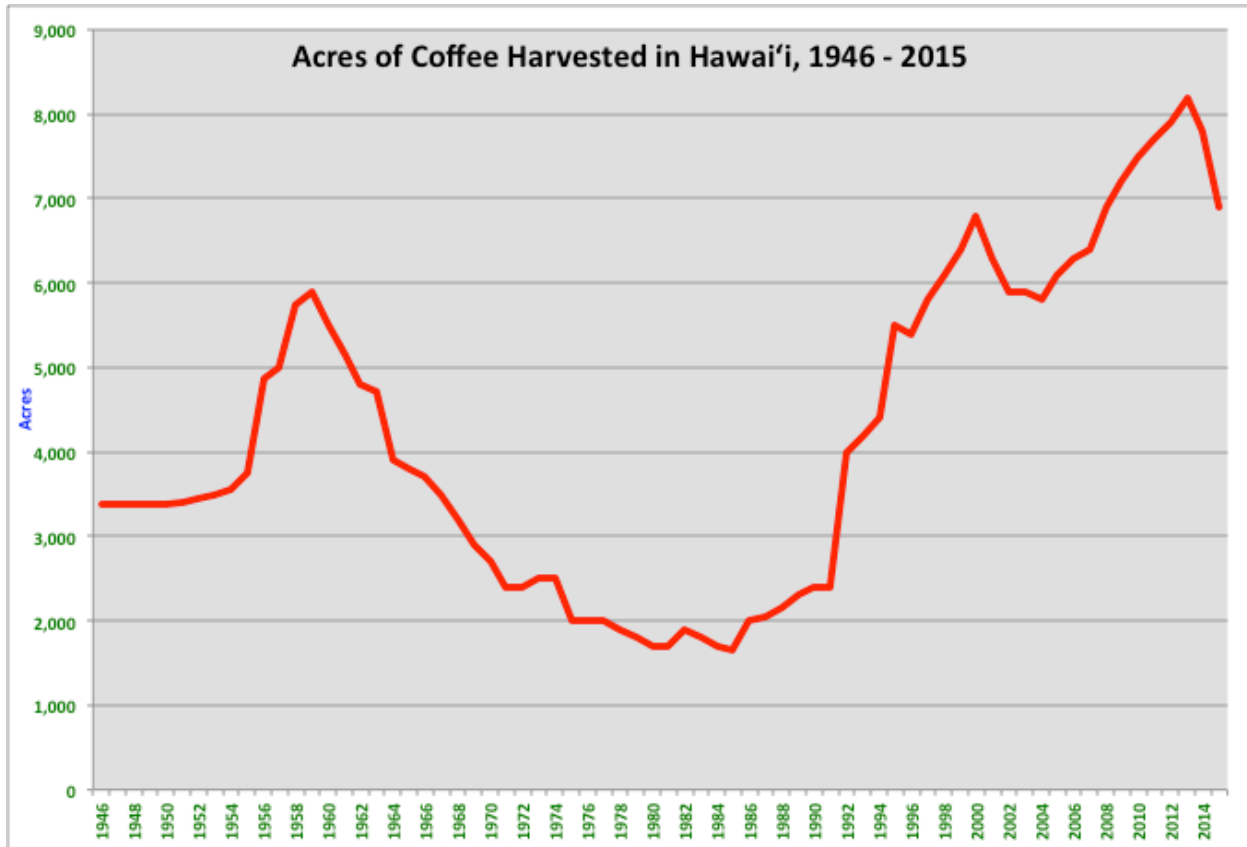
Hawai'i is the only US state that grows a commercial coffee crop (though Puerto Rico also produces coffee). The cash crop was introduced to O'ahu in the early 1800s, likely from Brazil. Plantings and cuttings made their way to Kaua'i, Hilo, and Kona, through the work of missionaries. Kona's plantings would be the only ones to thrive at that time, partly because the lands were unsuitable for sugar cane production. After annexation, sugar prices rose and most coffee lands were lost to plantations, with the exception of Kona. It wouldn't be until the sugar and pineapple industries started to falter in the 1990s that the Hawai'i coffee industry would gather momentum (see Chart 8).

Though the Kona region has been producing award-winning coffee for generations, investments from the Olsen Trust to support former sugar workers have put Ka'u and Hilo grown coffees on the map of distinctive, fine coffee growing regions. This is further discussed in later sections about the Olsen Trust

and OK Farms. Though production has also increased on other islands, Kona is by the far the largest growing region and has the highest sales price per pound. However, in recent years both Maui coffees and Ka'u coffees have scored well at competitions.

Since 2010, both acres of coffee harvested and average yields per acre have decreased significantly. This is largely attributed to the introduction of the Coffee Borer Beetle, as discussed in Appendix F (Woodill, Hemachandra, Nakamoto, & Leung, 2014). Yet prices and thus sales have increased, keeping it in the top five cash crops for the state (Lucas-Zenk, 2015).

Chart 8: Acres of Coffee Harvested in Hawai'i, 1945 - 2015



Source: USDA National Agricultural Statistics Service

Mac Nuts

Macadamia trees were first introduced to Hawai'i in the late 1800s as a windbreak for sugar cane plantings. In the early 1900s, they were planted in Kona orchards to supplement coffee crops. During the 1900s, macadamia nuts became an established industry in Hawai'i, led by Castle and Cooke (Royal Hawaiian brand) and then C. Brewer and Co. (Mauna Loa brand). Hawai'i became the world leader in commercial production and Hawai'i cultivated seed stock became the world standard (Shigeura & Ooka, 1984). However, Hawai'i's dominance in the global mac nut market place has fallen in recent years, and farmgate prices have fallen due to global over supply.

As a result of higher global production, industry experts say that the larger macadamia nut processing companies buy lower quality nuts on the international market, blend them with Hawai'i grown nuts, and

sell them under well known Hawaiian labels. Given the prevalence of blending and its affects on Hawai'i growers, an added premium has been placed on 100% Hawai'i grown nut products by Hamakua Macadamia Nut Company, an Ed Olsen Trust company that grows, buys, processes, and markets only Hawai'i grown nuts, buying from 300 to 400 independent farmers, including their own partner, OK Farms. Several attempts have also been made to protect Hawai'i's mac nut industry through legislatively mandated labeling. Most recently, however, coffee and macadamia nuts were both stripped from a truth-in-labeling law (Yager, 2015).

Like coffee, pineapple, and sugar, macadamia nuts are luxury goods, exported off island as cash crops or marketed to tourists for a premium. As Troy Keolanui of OK Farms says, and Jim Trump of Island Harvest agrees, these are not crops for feeding people, yet they do produce jobs and generate incomes.

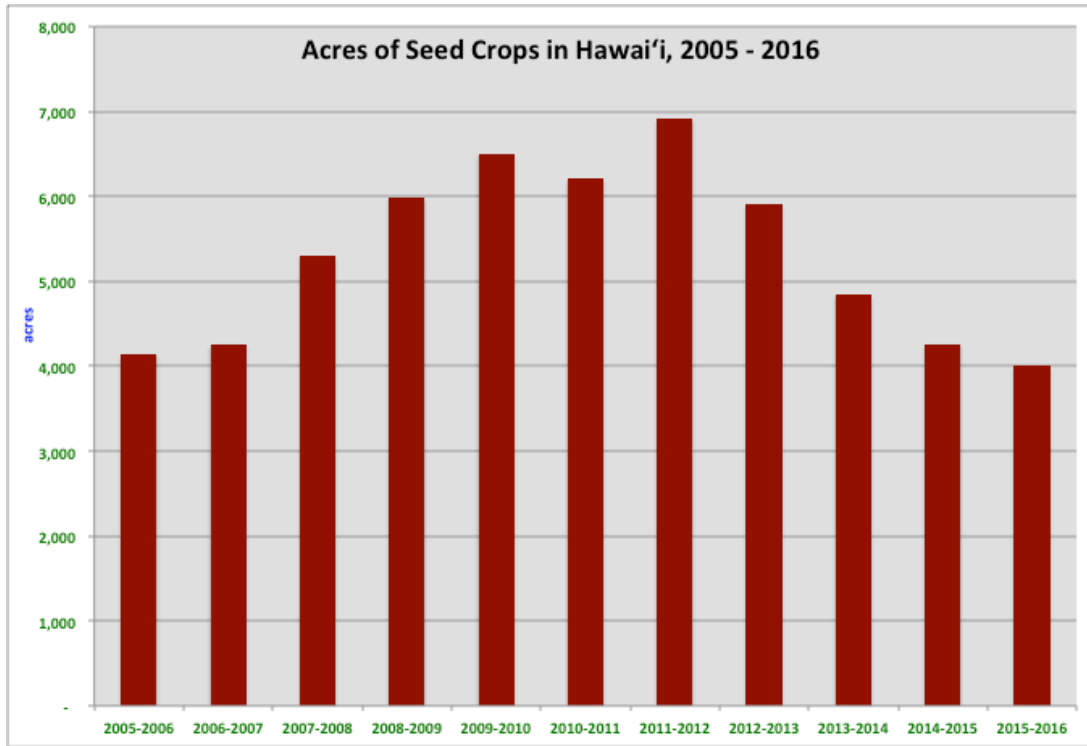
The Seed Corn Industry Grows

Over the past decade, the seed corn industry has been considered a more prominent part of Hawai'i agriculture. Some view it as the savior of agriculture on the Islands. The industry has been strong on Kaua'i and Moloka'i, especially. On the latter island, Monsanto hires 200-300 employees, making it far and away the largest employer on the Island, and an important economic engine.

Hawai'i is favored by the seed industry precisely because of the state's isolation. This means that new varieties can be grown free from contamination by other genetic strains offering predictable genetic traits. This is particularly attractive to the GMO seed industry. Most of the seeds produced on Hawai'i are GMO varieties. Breeders also like the state because the growing season allows for two complete crop cycles each year, which means that new varieties can be developed far more rapidly than on the North American continent.

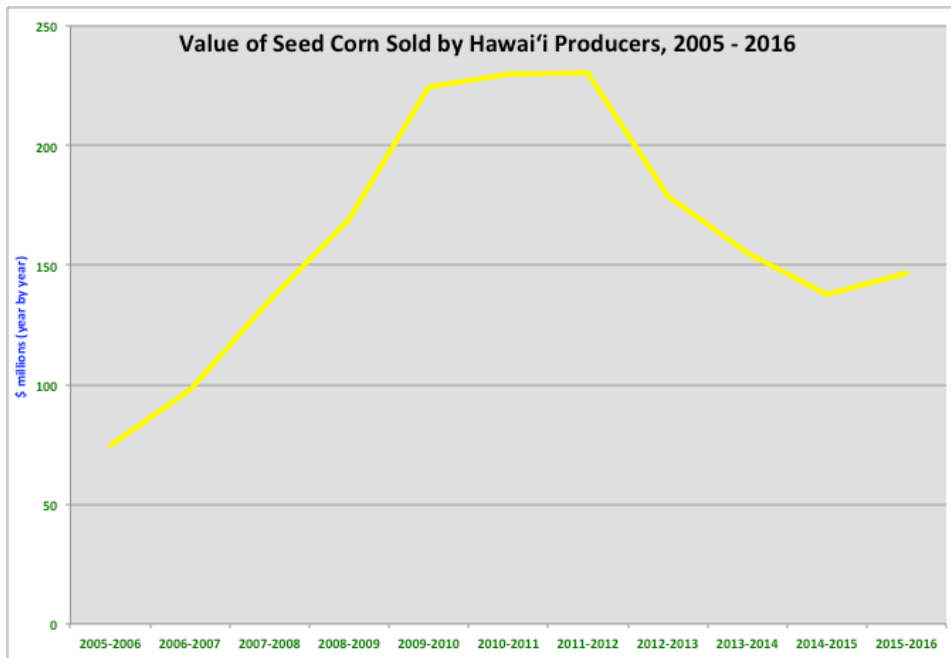
Yet the seed industry is also prone to global price pressures, as the next two .s show. Seed corn was much in demand for several years when corn prices rose to \$7 a bushel. Yet that bubble has now burst, and continental United States corn prices are well below the cost of production. USDA currently estimates that the average farm in the Corn Belt lost \$62 per acre raising corn in 2016 (USDA-ERS 2016), if all costs are taken into account. Accordingly, both acreage of seed crops (Chart 9) and sales of corn seed (Chart 10) have fallen to levels that prevailed a decade ago.

Chart 9: Acres of Seed Crops in Hawai'i, 2005 - 2016



Source: USDA National Agricultural Statistics Service

Chart 10: Value of Corn Seed Sales from Hawai'i, 2005-2016

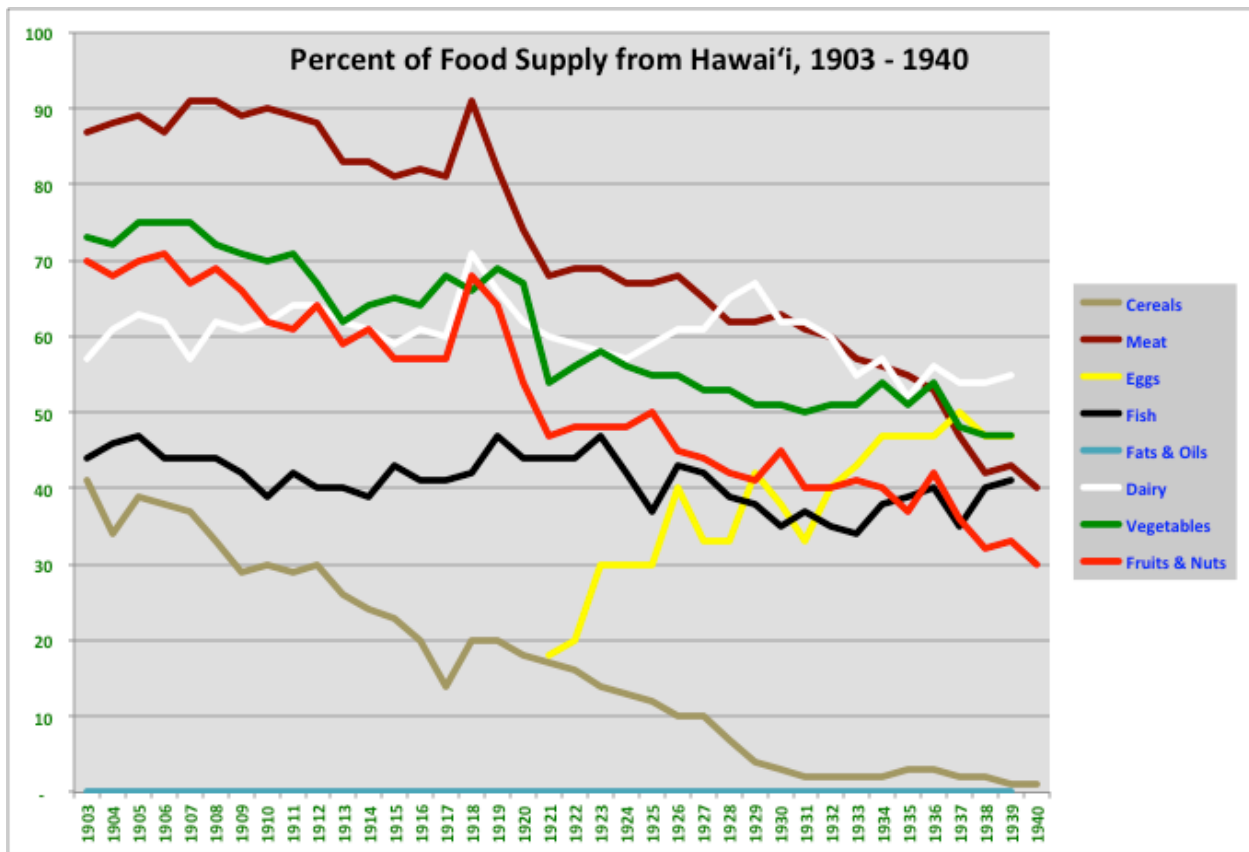


Source: USDA National Agricultural Statistics Service

Food Crops to Feed a Growing Population

During the early 1900s, the Islands tracked carefully the source of their foods. Robert Schmitt published the data shown in Chart 11 in 1947, showing the percentage of food items that were produced in state. Meats, fruits, vegetables, and cereals suffered the largest losses, while dairy held its own, and egg production rose steadily. Tracking of local food production appears to have halted during the World War II, when the military began shipping in food from the continental United States as part of the war effort. This launched a trend that has lasted until today. Studies estimate that 85 percent of the food eaten on the Islands is produced outside. Although this is low compared to national averages (most states import 90% or more of their food from other states), other states do not face the same natural threats to supply lines.

Chart 11: Percent of Food Supply from Hawai'i, 1903 - 1940



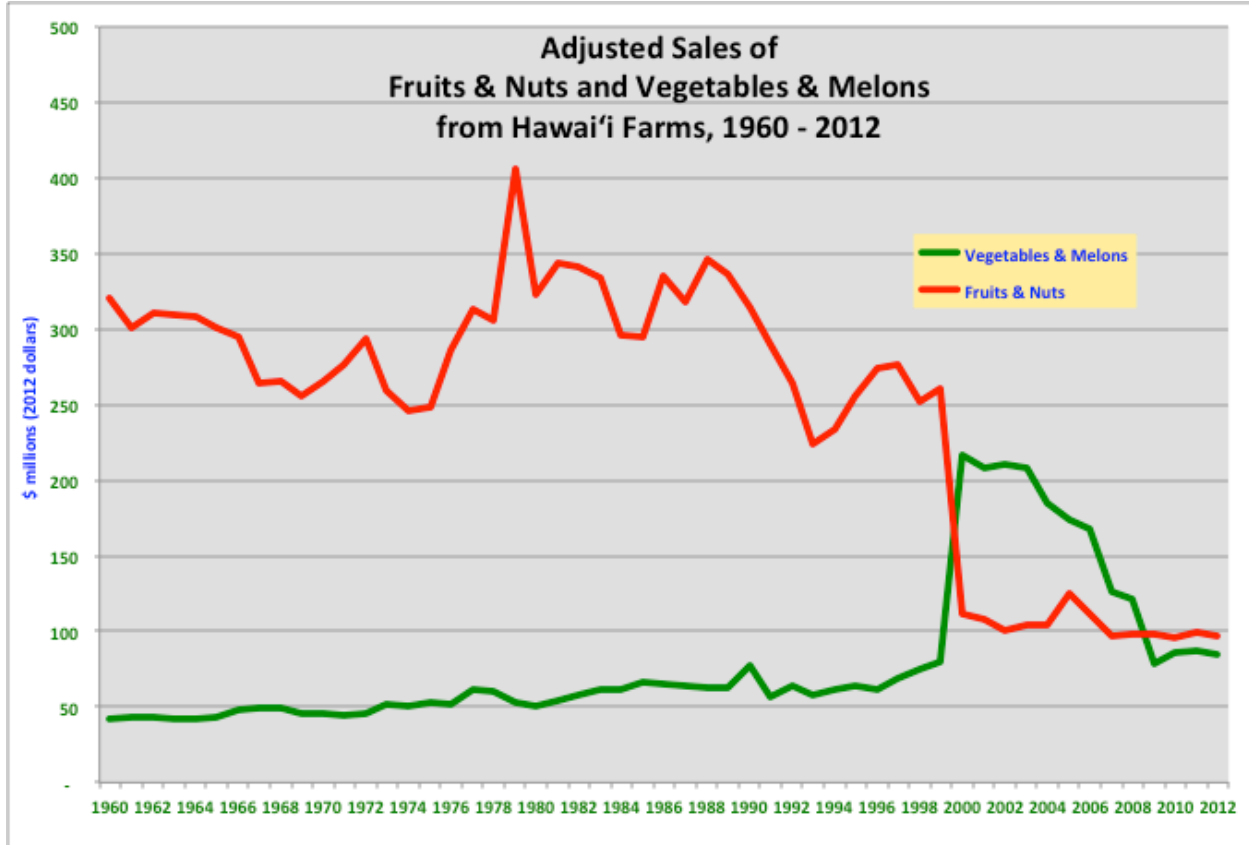
Source: Schmitt (1997), *Historical Statistics of Hawai'i*

The decline in the percentage of people eating food raised on the Islands was influenced by the proliferation of refrigerated shipping, and a lack of public planning to ensure that food production would keep pace with a rising population during first part of the 20th Century. Rather, state policy focused on export industries, as discussed above.

Lacking a planned effort in Hawai'i, market forces favored imported food. The rapid rise in population from the heightened defense presence during World War II only contributed to that impact.

So, despite rising population, fruit and nut sales continued to decline after statehood, as Chart 12 shows, and growers continued to focus on export markets. This chart also shows that once melons were categorized as vegetables in 2000, to be consistent with USDA practice, fruits sales dropped even further while vegetable and melon sales rose rapidly. Yet vegetable sales would still drop precipitously.

Chart 12: Adjusted Sales of Fruits & Nuts and Vegetables & Melons from Hawai'i Farms, 1960 - 2012

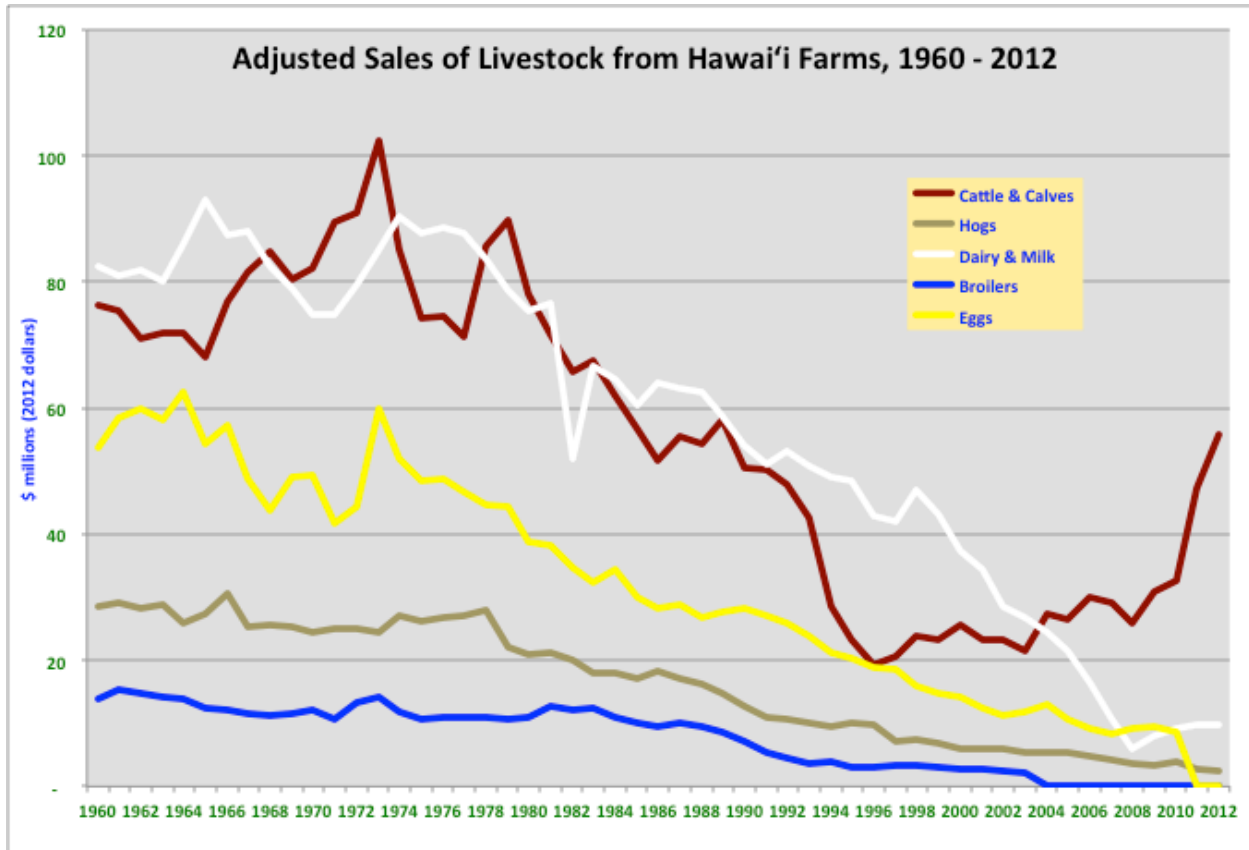


Source: USDA Economic Research Service. Cash Receipts by Commodity. Adjusted to 2012 dollars. Note that melons were categorized as a fruit before 2000, and then as a vegetable, accounting for the crossed lines on the chart.

Livestock & Fish

During the same period, sales of livestock and related products from Hawai'i farms declined, until cattle and calf sales made a turnaround in 2008, based largely on rising global prices for beef. This is shown in Chart 13, below.

Chart 13: Adjusted Sales of Livestock and Related Products from Hawai'i Farms, 1960 - 2012



Source: USDA Economic Research Service. Cash Receipts by Commodity. Adjusted to 2012 dollars.

Dairy

Cattle were first introduced to Hawai'i in 1793, as a gift to King Kamehameha I by Captain George Vancouver. The original breeding pairs were largely left alone for forty years. In 1869, the first commercial dairy opened. Though milk was not a part of the Hawaiian diet before the introduction of cattle and the per capita consumption of dairy in Hawai'i has always lagged behind the national average, milk consumption skyrocketed between 1920 and 1930 due to school-based nutrition and promotion. Plantations also provided milk to workers at a reduced cost. World War II contributed to the increased consumption of milk, as it provided a significant source of calories to those serving at the military bases. In 1955, there were 83 dairies on record, and the Island's cattle population peaked in 1960 at 15,000 head (Gupta, 2016).

Volatility in the milk market led to the Milk Control Act of 1967, which set production quotas and price minimums in order to give dairy farms more power in negotiations with processors. At the time, Hawai'i was self-sufficient in dairy production and continued to be so until the early 1980s. During that period, Hawai'i-produced milk became contaminated with a pesticide used in pineapple cultivation. Massive recalls of local milk led to the importation of dairy products from the North American continent. After this, the Hawai'i dairy industry crumbled (Gomes, 2014).

Although the Milk Control Act set price minimums to protect dairy farms, it didn't require that Hawaiian dairy processors purchase local milk, just that when they did purchase local milk, they purchased it at a certain price minimum. In the mid 1990s, bulk shipments of milk from the North American continent became more economical than bulk shipments of livestock feed for the dairies, so dairies started closing rapidly. This left two dairies — Big Island Dairy & Cloverleaf Dairy — on Hawai'i Island (Gupta, 2016).

In 2014, Big Island Dairy asked for a waiver from the Milk Control Act in order to sell fluid milk to Meadow Gold at below established price minimums in order to compete with North American continent dairies. Similarly, in 2015, Cloverleaf Dairy asked for the same waiver after attempting to sell the dairy to the Ulupono Initiative. The deal with the Ulupono Initiative fell through, and at the time of this writing Cloverleaf Dairy, sold under the Mountain Apple brand at KTA stores, was in the process of selling its dairy and assets plus an agricultural land lease to a new firm, Mauna Kea Moo. Owner Ed Boteilho cited increased competition from North American continent milk and Big Island Dairy as a primary reason for needing to pay fluid milk prices below the cost of production, which in part led to the need to sell the operation. Mauna Kea Moo hopes to transition to organic production and a vertically integrated system complete with grain production and cheese and yogurt processing. Mauna Kea Moo was also recently granted an agricultural lease on former sugar plantation land.

Meanwhile, the Ulupono Initiative is pursuing a pasture-based dairy operation on the island of Kaua'i. This new dairy has been met with much resistance from neighbors who do not like the prospect of living close to livestock. Ulupono feels these concerns can be addressed by rotational grazing that will reduce manure loads. The dairy is projected to open in 2018 under the name Hawai'i Dairy Farms. A Midwestern dairy manufacturer has also been exploring the construction of a large dairy processing plant.

As a highly perishable product, dairy is of high priority for local production and import substitution. Currently, fluid milk is pasteurized in California, loaded onto super-cooled tankers, and then milk is pasteurized again in Honolulu. Some have called for closer monitoring of this practice to insure the quality of imported milk. Additional recommendations from industry experts include land use policies that support grazing and irrigation water and making land available for growing forage crops (Hawaii Department of Agriculture , 2007).

Beef Cattle

A common refrain throughout interviews and readings is the expense of importing livestock feed to the Islands. This is why Mauna Kea Moo is focusing on raising its own corn, and Hawai'i Dairy Farms is focusing on rotational pasture based system. However when it comes to cattle, most Hawai'i-born calves are sent to feedlots and then slaughterhouses on the North American continent. This beef then becomes part of the national beef supply chain. Hawai'i consumers typically purchase beef from these national sources.

Cattle production on the Islands mostly ceased in the 1990s due to the rising costs of importing livestock feed and the declining availability of lands for grazing. Slaughtering costs are also said to have spiked in the 1990s. Reallocation of sugar plantation lands may help offset some of the declines of the industry by providing a land base for new grass-fed production, but cattle production is still constrained.

Increased consumer interest in locally grown beef has led to new marketing initiatives, however. In 2011, Hawai'i Cattle Producers Cooperative Association launched the Hawai'i Ranchers Hawai'i Country Beef program. Under this program, Hawai'i-born calves are sent to a feeding operation in Oregon, but

they're isolated from other cattle. After slaughter, the processed beef is returned to Hawaiian markets and restaurants. This program is part of the Country Natural Beef Co-operative through which Parker Ranch sends most of its calves. Under this program, cattle growers can maintain ownership of their steers while they're being fed and finished on the North American continent.

Although this program creates additional opportunities for Hawai'i farmers to feed Hawai'i consumers and vice versa, it still does not address significant constraints to Hawai'i's ability to provide for itself. Some estimate that Hawai'i's six slaughterhouses are at most able to process 10% of Hawai'i's cattle production.

"There is nothing Hawai'i ranchers would like more than to leave their cattle here," Parker Ranch's Keoki Wood said (Toth, 2012). "But until economically competitive and viable finishing and processing segments of the industry are developed in Hawai'i with adequate capacity, the cow-calf producers must send the majority of their calves to West Coast states to stay in business. As transportation costs continue to increase, it might make more sense to leave more cattle in Hawai'i," Woods said (Toth, 2012).

The Hawai'i Cattlemen's Council and other stakeholders recommend a variety of initiatives to support the cattle industry. These include marketing and education campaigns for consumers; land use policies that support grazing and open space; developing local feed sources; making water available to irrigate fallow plantation lands; and coordinating bulk shipment of livestock feeds (Hawaii Department of Agriculture, 2007).

Pigs, Wild Hogs

Though pork is part of a Native Hawaiian diet, and a canoe food, the wild (feral) pig population is descended from European lines introduced shortly after contact with Captain Cooke. Polynesian pigs were small, docile, and prone to domestication, whereas the European pig is much larger and even domesticated animals are considered "just one step away from wild." As such, hunting pig is not a historical Hawaiian tradition, but instead a hybridization of cultures. The feral pig is considered the greatest threat to Hawai'i's natural ecosystem and at various times throughout history, eradication programs have been implemented. Now, hunting of these animals is widely encouraged and is considered a valuable part of a subsistence lifestyle. Only 2% of the state population will obtain a hunting license, but this is likely a very conservative evaluation of the utilization of wild pork (Maly, Pang, & Burrows, 2007).

A cohesive swine industry does not exist in Hawai'i. Small family farms will raise a couple of head for their own use and for whole animal sale to ethnic and native Hawaiian consumers, but these farms are largely disaggregated and not participating in the mainstream consumer market. For example, in 2007, about 15,000 head were slaughtered in Hawai'i. Two-thirds of them were imported from the North American continent as live animals. One argument for this is that there are not enough pigs produced on the Islands to keep the facilities open and viable, thus processing North American continent pigs insures that the facilities are operational when an Island farmer needs to use them. That same report commented, "Swine farms are family farms with limited land, limited resources, and limited economies of scale" (Zaleski, 2007).

Yet, some report that locally raised pigs are largely sold as whole animals on farm for *luaus* and other traditional festivities and are not part of the commercial slaughtering and packing industry. It is these

traditions and cultural practices that drive the demand for pork, which is purportedly greater than average US consumer demand.

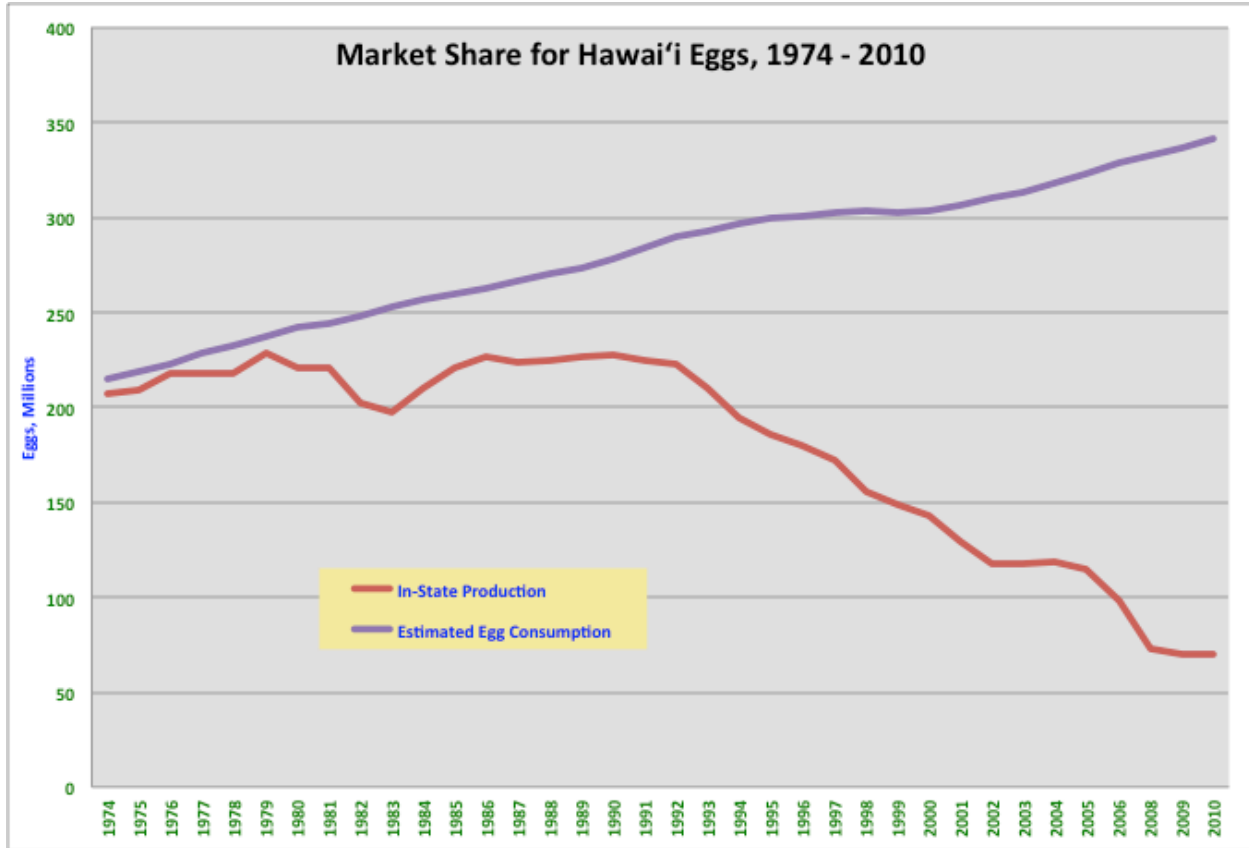
Common issues in this industry are availability of feed and land, as well as slaughtering costs. Often the value of having pigs as part of a diversified farm operation is their flexibility around feed. Like goats, pigs are not discerning eaters. This has led to pilot projects on O'ahu and Hawai'i which process garbage and agricultural wastes into usable feed products for pigs. Along the Kona-Kohala coast, unused food from restaurants is largely fed to pigs. These are interesting strategies to pursue if Hawai'i is to provide for itself.

Some of the same disagreements break out between home dwellers and pig farms, as noted above with regard to cattle and dairy. In response, dozens of farmers are adopting Korean Natural Farming practices, which reduce odors substantially and help build soil fertility.

Eggs & Poultry

Similar to pork, the poultry industry is disaggregated, composed mostly of small family farms. Overall production and sales have flat-lined in the last two decades, while farms and flock sizes have gotten smaller. In 2007, the market share of locally produced eggs was estimated at 35% and this demand was being filled by a couple of large farms (Hawaii Department of Agriculture , 2007). Later there were reports of island-raised egg shortages from 2013. The current market share of locally produced eggs is closer to 20%. This overall decline is featured in Chart 14. It is important to note that egg production data was suppressed by the USDA NASS after 2010 due to disclosure agreements and consolidation in the marketplace. Two major North American egg producers have been exploring the possibility of developing a 300,000 to 1-million hen laying facility in central O'ahu since 2015. This is still a drop in the bucket in comparison to the total demand for eggs in Hawai'i, which as Chart 14 shows, is close to 350 million eggs.

Chart 14: Relative Market Share of Local Eggs



Source: USDA NASS Survey production data & national per capita consumption estimates

Until recently, broilers and spent hens could only be slaughtered and processed on Kaua'i after an O'ahu-based company stopped processing Hawai'i-raised birds in favor of North American continent imports. But now, on Hawai'i, Punachicks Farm is able to process on farm after becoming the first farm in the state to receive a USDA on-farm exemption and is now an "approved source" according to the Hawai'i Department of Health. This allows them to sell to a variety of consumer and wholesale outlets. Punachicks has tripled production, from 2,400 broilers a year to 7,200 broilers, and they've reached the capacity of their current 5.5 acre land lease, requiring them to turn down orders and pursue other land options (Ashe, 2016).

The biggest threats to eggs and poultry production are the perceived conflicts between urban development and agricultural uses, the high cost of feed and transportation, and competition from North American continent poultry and egg producers. Yet, local producers of broilers and eggs would attest to the great demand for these products to be locally produced.

Fish

Seafood and ocean products have always played a significant role in the Hawai'i diet. The first land tenure system, *ahupua'a*, ensured that every territory had access to the sea in order to harvest fish, shellfish, seaweed, and salt. The *kapu* system regulated fishing seasons in order to maintain sustainable

populations in the open ocean. Artificial fishponds were constructed on reefs, lagoons, and inlets to provide a more consistent supply of proteins.

European contact brought with it new technologies that increased the efficiency of fishing activities and allowed Hawaiians to sell excess fish into a new cash market. Hawai'i became an essential part of the whaling industry, providing a source of fresh foods for whaling vessels on their way back and forth to Japan, mostly. Some say it was the demands of these vessels and their crews that fundamentally changed agriculture and cultivation on the Islands toward filling more of a European diet. Though the whaling industry collapsed in the mid to late 19th century, the various support industries adapted and evolved into a commercial fishing industry (Schug, 2001).

Various immigrant populations brought in to work on the sugar plantations continued to influence the industry, though Japanese immigrants brought expertise in fishing with them, and gravitated to the industry. Japanese influences are cited as the most significant, eventually leading to an almost total displacement of Hawaiians participating in this part of the cash economy. The introduction of larger, motorized fishing vessels in the early 1900s allowed Japanese fishermen to cover more territory, explore previous untouched grounds, and land more fish, thus collapsing the market price. Tight-knit Japanese communities would lend money for the purchase of new equipment and ships, even when banks (owned mainly by plantation owners) refused, thus allowing even newly arriving immigrants to thrive. Hawaiians had little access to larger ships, engines, and capital, and largely dropped out of the commercial industry (Schug, 2001).

For many years, a solid canning industry established itself in Hawai'i. The first cannery was incorporated in 1922, encouraging both the expansion of tuna fishing in Hawai'i and Japan. By the 1930s, Hawai'i was importing frozen tuna from Japan to Honolulu and Hilo, and exporting canned tuna to New York City and other major North American continent cities. Canned tuna became Hawai'i's third largest export. By World War II, Hawai'i had a multi-million dollar industry that employed thousands of people (Schug, 2001).

Unsubstantiated suspicions of espionage led to several laws that crippled Japanese access to the Hawai'i fishing industry in the late 1930s and early 1940s. One law, in particular, had the stated goal of protecting fishing grounds for Hawaiians, but US citizens were still able to access them. After the attack on Pearl Harbor, during which many Japanese fishing vessels were attacked and Japanese fishermen were interned, the industry nearly collapsed (Schug, 2001). By statehood, the commercial fishing industry was described as "dying" and it continued to collapse into the 1970s, due to degrading equipment and a lack of industry organization (Pooley, 1993).

The introduction of larger vessels from the Pacific Northwest in the 1980s rescued the industry and encouraged more fishing in the Northwest Hawai'i Islands. The discovery of rich lobster grounds and new freezing technologies also helped. However this next evolution in the industry has been largely motivated by the demand for high value fish to export markets and/or to restaurant markets. It has driven up market prices, and by some accounts, made staple fish less available to local consumers, both in volume and price (Pooley, 1993).

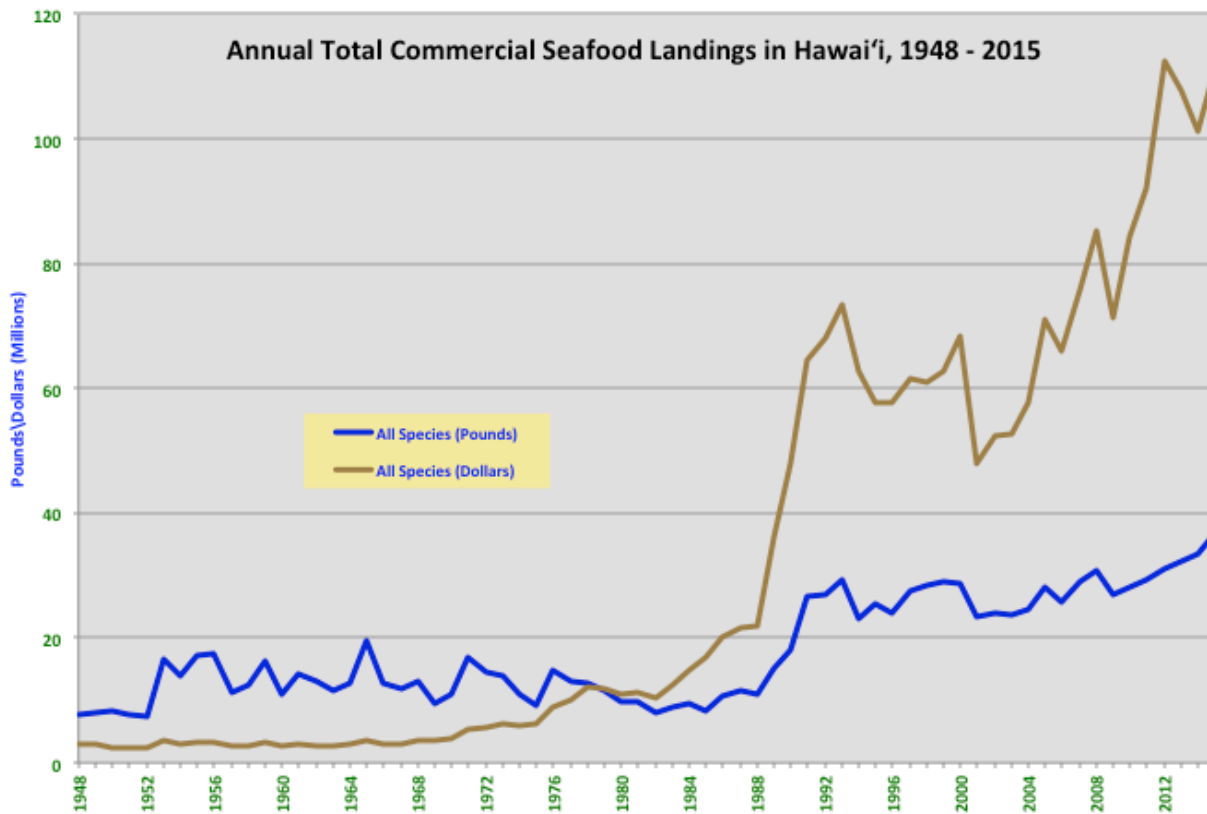
In comparison to most areas of the United States, local residents have easy access to recreational fishing areas and Native Hawaiians have the right to engage in traditional practices, even on private property. However, water quality and fish populations have declined as a result of both runoff and the growing commercial industry. Tourism and development have altered shorelines and access points, eliminating

many opportunities for individual operators. Turtle (*honu*) was once a traditional food, but now is classified as endangered.

As a result, one Hawaiian fisherman is quoted in a local publication, saying, “If you undertake a conservation project, do so supporting native fishing practice. If not, we may convert subsistence areas to tourist attractions, lose knowledge of feeding ourselves, and suffer more social ills. Problems develop when people are cut off from their ancestral work,” (Mandoe, 2011).

Today, Hawai'i's fishing industry is still a high-value industry, contributing a minor amount to the national fishing industry in respect to total landings (measured in pounds), but ranking 8th in the nation for value (measured in dollars) (Chart 15) (WPacFIN, 2016). Hawai'i consumes twice the average national per capita consumption of fish, but imports 60% of what it eats.

Chart 15: Commercial Fishing Landings, 1948-2015



Source: Fisheries Monitoring Branch Western Pacific Fisheries Information Network (NOAA), 2016

Fruits, Vegetables, Other Food Products

In a land that once provided food crops entirely for its people and placed cultural significance on people providing for each other, it can be shocking to consider how much of the current agricultural production is dedicated to high value, luxury goods for export. By some estimates, Hawai'i is exporting 80% of its agricultural products and importing 85% of its food (Hollier, 2014). Bananas, papayas, taro, and avocados are the only fresh-market food crops that contribute significantly to agricultural sales, and even these are very minor in comparison to coffee and macadamia nuts (USDA-NASS, 2014). In recent

years, some vegetable growers have built considerable scale to sell in Honolulu grocery stores, and many food products for fresh consumption are produced on small, diversified, and disaggregated farms.

Though Hawai'i has typically focused on high-value commodity exports, it still has the ability to provide considerable food for itself. Much of the rest of this report focuses on this potential and what can be done in a post-plantation era.

Hawai'i Farms Have Not Fared Well in Recent Years

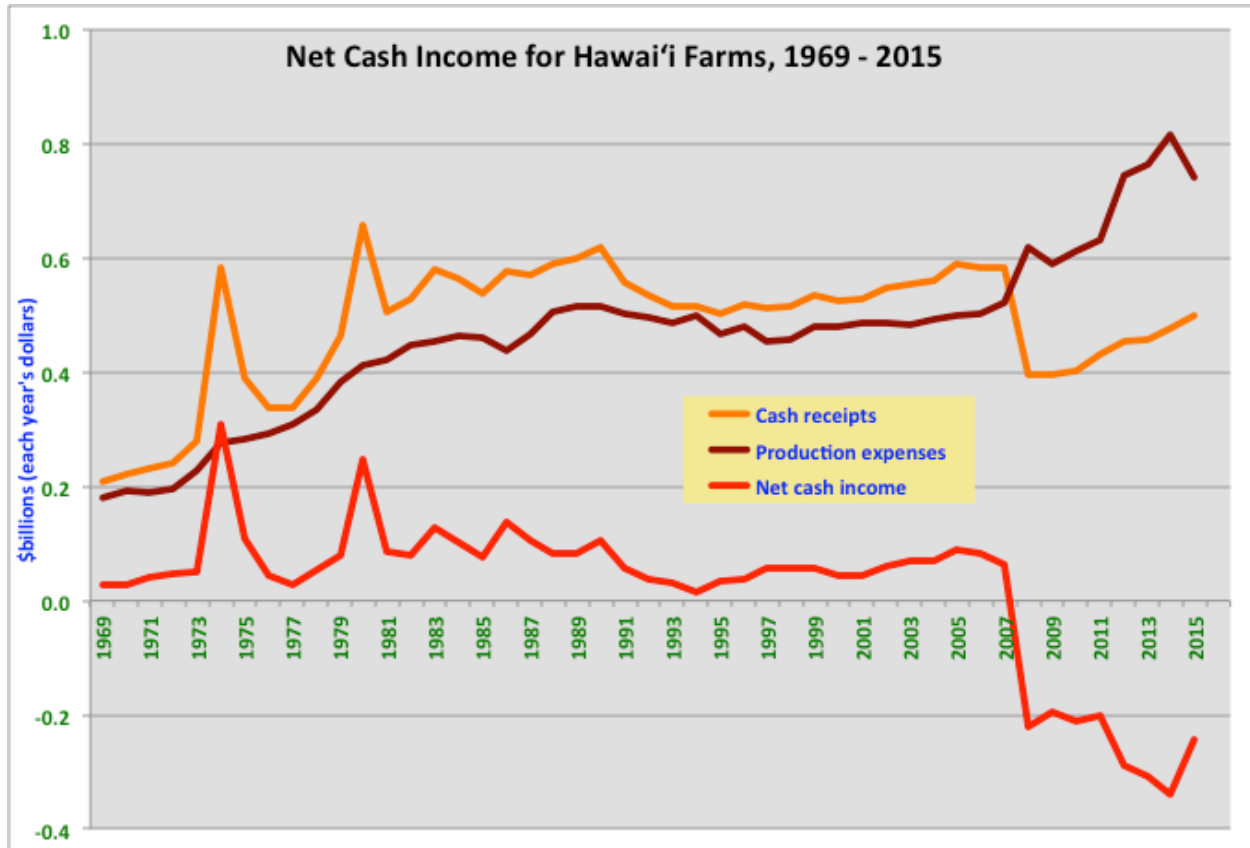
The farm revenue charts shown above display only the income side of the equation. Additional patterns emerge by examining farm data from the Bureau of Economic Analysis, showing both cash receipts and production expenses.

These data are readily available for the state of Hawai'i from 1969 to 2015, as shown in Charts 16-17 below. In these two charts, cash receipts for all Hawai'i farms combined are shown with the orange line. Production costs are depicted with the maroon line. When these production expenses are subtracted from cash receipts, we get the red line — the net cash income from producing crops and livestock, for all farmers in the state (See Appendix C for county data).

These data show that cash receipts for Hawai'i farms peaked in 1974 and 1980, when sugar prices experienced a temporary rise. Receipts returned to similar (and steadier) levels during the years 2005 – 2007, but then began to decline sharply, even while production costs rose suddenly. By 2008, Hawai'i farms were spending \$200 million more each year to produce crops and livestock than they received by selling these products. Added together, farmers suffered a \$1.8 billion loss from 2008 – 2015.

This certainly was not positive news for Hawai'i farms, but it was only the most dramatic element of a decline in net cash income that had been underway since 1986. Although net income had hovered near 10 percent of cash receipts all of this time, there was little lasting growth. Only when sugar prices spiked did plantations reap significant gains.

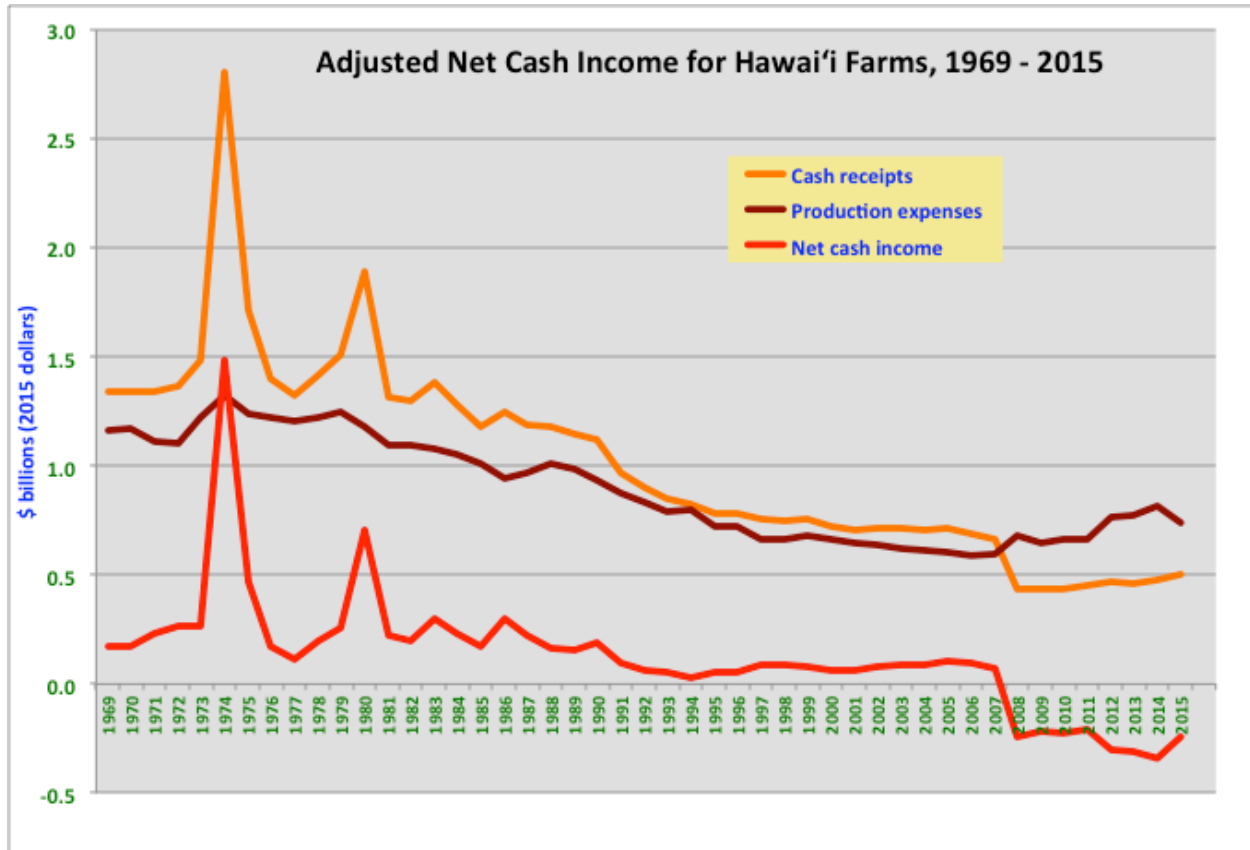
Chart 16: Net Cash Income for Hawai'i Farms, 1969 - 2015



Source: Bureau of Economic Analysis

These trends look even more stark when the data are adjusted for the cost of living, as Chart 17 shows. Once adjusted, the peaks in the 1970s appear even more dominant, with farmers earning a surplus of \$1.5 billion in a single year, 1974, but never returning to lasting profitability. Losses were sustained to such an extent that Hawai'i farms earned \$419 million less by farming in 2015 than they had in 1969. As farmers competed on global markets against new producers with lower land and labor costs, Hawai'i's reliance on export markets became deeply problematic.

Chart 17: Adjusted Net Cash Income for Hawai'i Farms, 1969 - 2015



Source: Bureau of Economic Analysis

Notably, more than half of the state’s farms reported net losses in 2012, with both large farms and small farms spending more than they earned. Tables 6 and 7 below show totals for farms that posted either net gains or losses. While these data are not entirely consistent with the Bureau of Economic Analysis data above, because ERS & NASS define income differently, they illustrate the fact that gains and losses occur at all levels of scale.

Table 6: Farms in Hawai'i Reporting a Net Gain in 2012, by Level of Sales

	Number of Farms with Net Gains	Gains (\$)
Less than \$1,000	333	156,000
\$1,000 to \$4,999	1,002	2,815,000
\$5,000 to \$9,999	619	4,556,000
\$10,000 to \$24,999	796	12,867,000
\$25,000 to \$49,999	297	9,819,000
\$50,000 or more	366	116,556,000
Total	3,413	146,769,000

Source: Census of Agriculture (2012)

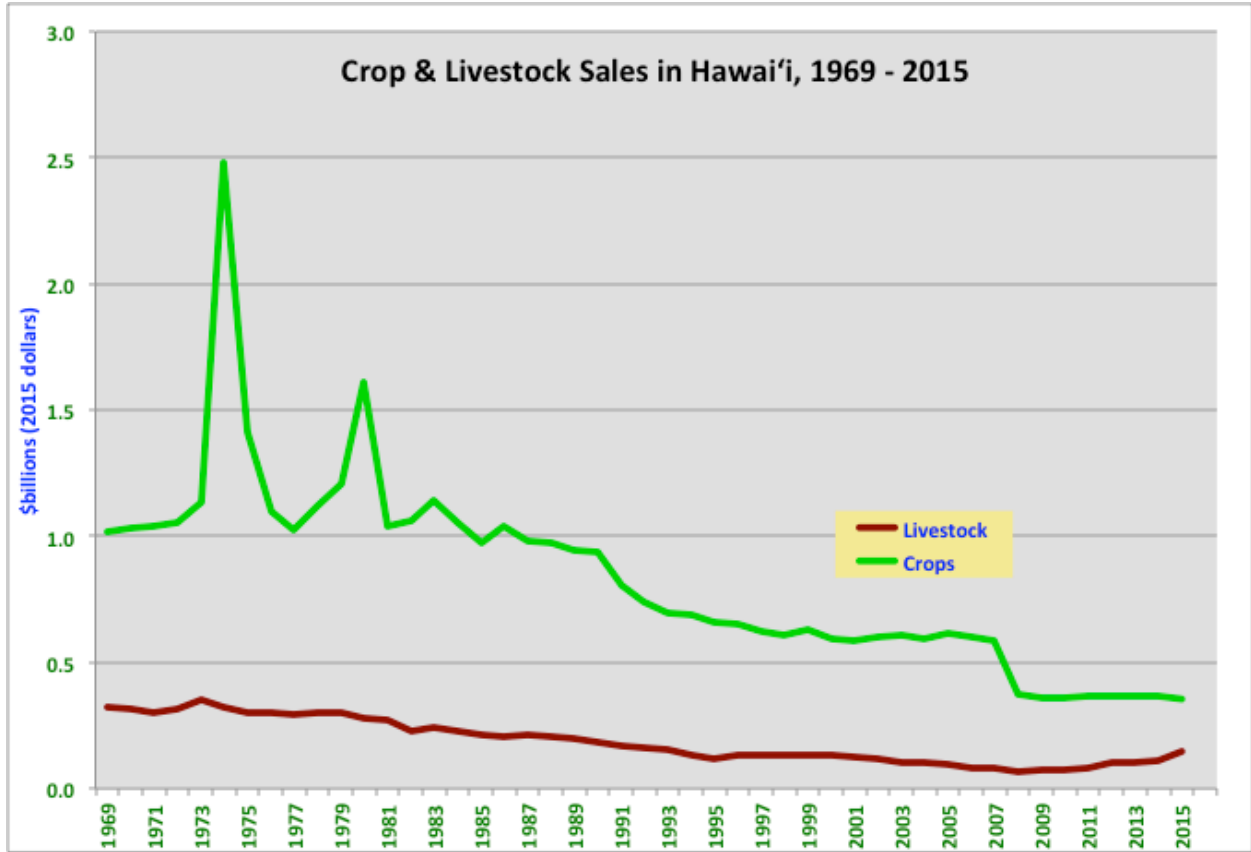
Table 7: Farms in Hawai'i Reporting a Net Loss in 2012, by Level of Sales

	Number of Farms with Losses	Losses (\$)
Less than \$1,000	442	211,000
\$1,000 to \$4,999	1,091	3,009,000
\$5,000 to \$9,999	689	4,930,000
\$10,000 to \$24,999	711	11,432,000
\$25,000 to \$49,999	352	12,074,000
\$50,000 or more	302	71,139,000
Total	3,587	102,795,000

Source: Census of Agriculture (2012)

As Chart 18 shows, trends in farm income reflected losses for both livestock and crop sectors. Not surprisingly, as the plantation economy waned, losses in crop income were larger. Livestock income eroded slowly and steadily.

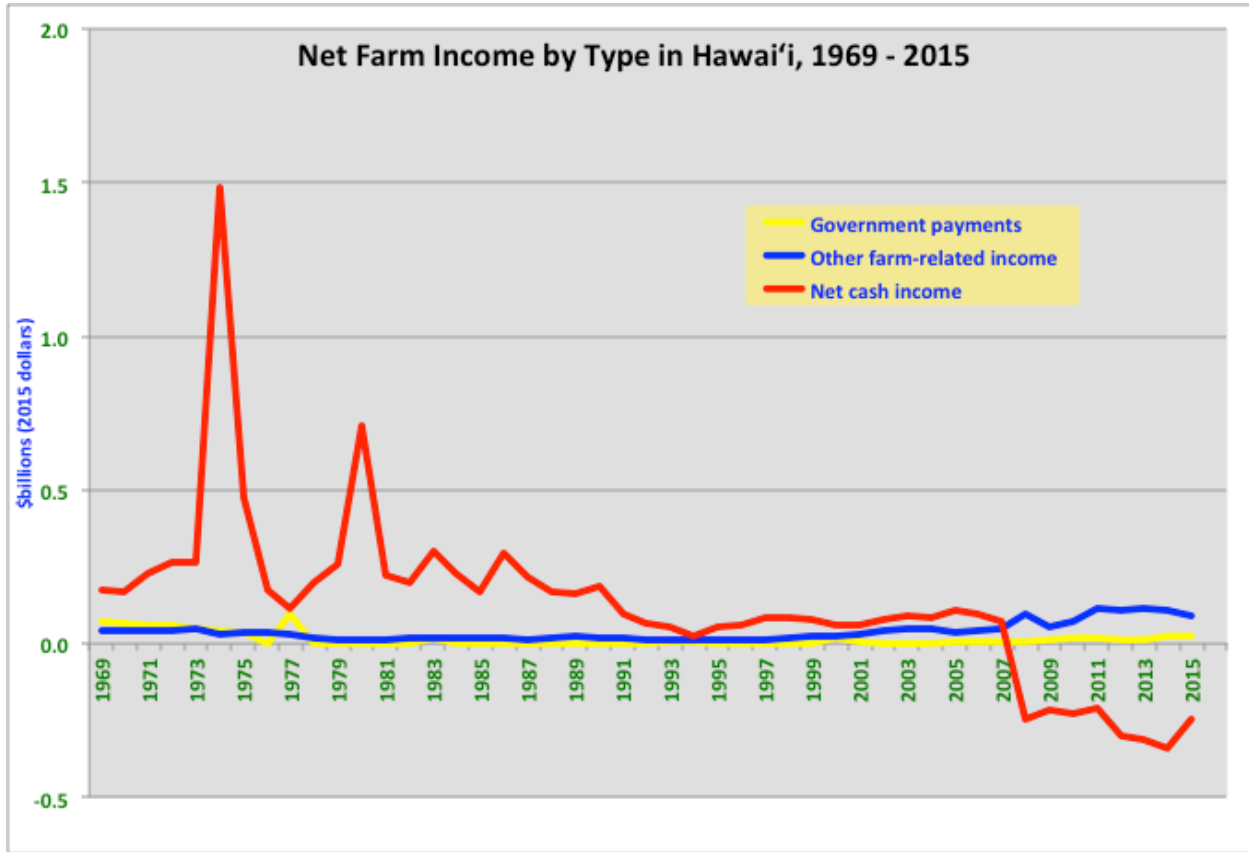
Chart 18: Crop and Livestock Sales by Hawai'i Farms, (adjusted) 1969 - 2015



Source: Bureau of Economic Analysis

As revenue from production fell, Chart 19 shows, “farm-related income” became the largest source of income for Hawai'i farms. This is typically income from renting out land — which by now had become more significant than actually farming as a source of income for landowners.

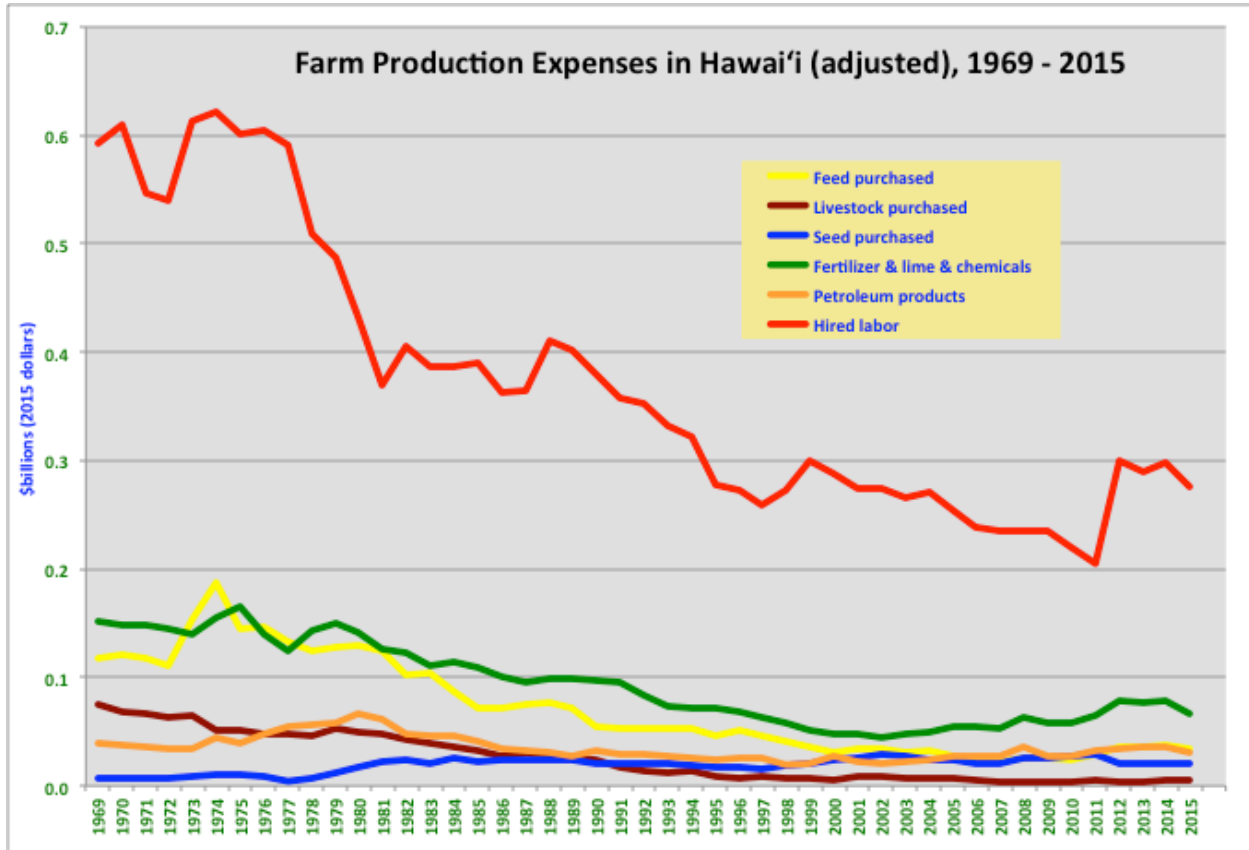
Chart 19: Net Income by Type (adjusted) for Hawai'i Farms, 1969-2015



Source: Bureau of Economic Analysis

As the number of plantation farms dwindled, income for the farmworker sector also floundered. By 2015, farm laborers were earning a combined \$300 million, only half of the money (in adjusted dollars) the sector had earned in 1969. Chart 20 shows these trends. Much of this decline was due to reduced employment. In addition, new immigrant field workers are not protected by union agreements.

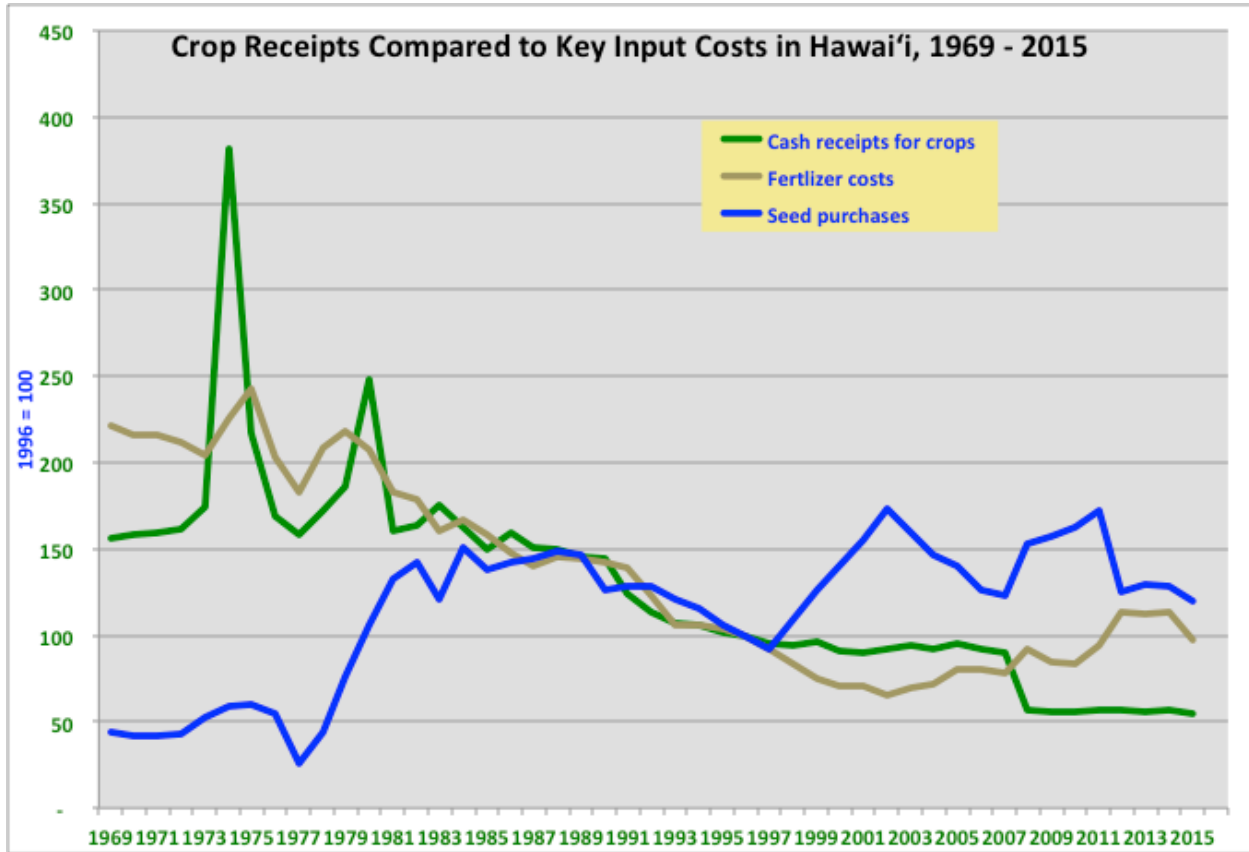
Chart 20: Production Expenses for Hawai'i Farms (adjusted) 1969 -2015



Source: Bureau of Economic Analysis

Meanwhile, the costs of seed rose faster than cash receipts for crops, or costs of fertilizers, though these latter costs made an upswing in recent years. Chart 21 shows this progression, with all lines normalized to a common level in 1996.

Chart 21: Crop Receipts Compared to Key Input Costs (1996 = 100), 1969 - 2015

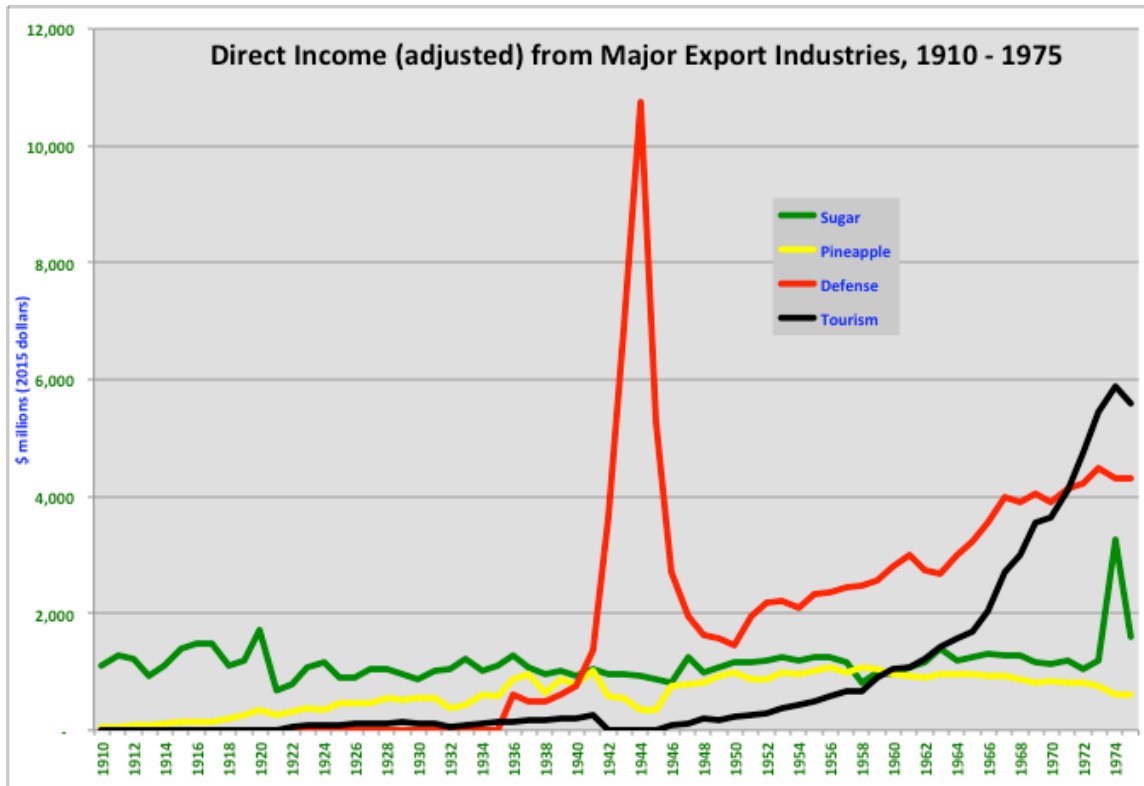


Source: Bureau of Economic Analysis

Looming on the horizon were major changes in the Hawai'i economy, as two immense industries began to leave agriculture in the shadows. As Chart 22 shows, military deployment on Hawai'i became the main source of income on the Islands from 1941 to 1970. By 1971, this industry had been surpassed by tourism.

Note that this data surprisingly considers defense and tourism as “export” industries, even though both brought new consumers to Hawai'i. This categorization makes sense, however, as a way of comparing income earned by industries that were primarily focused on outside consumers, rather than residents of the state.

Chart 22: Direct Income (adjusted) from Major Export Industries, 1910 - 1975



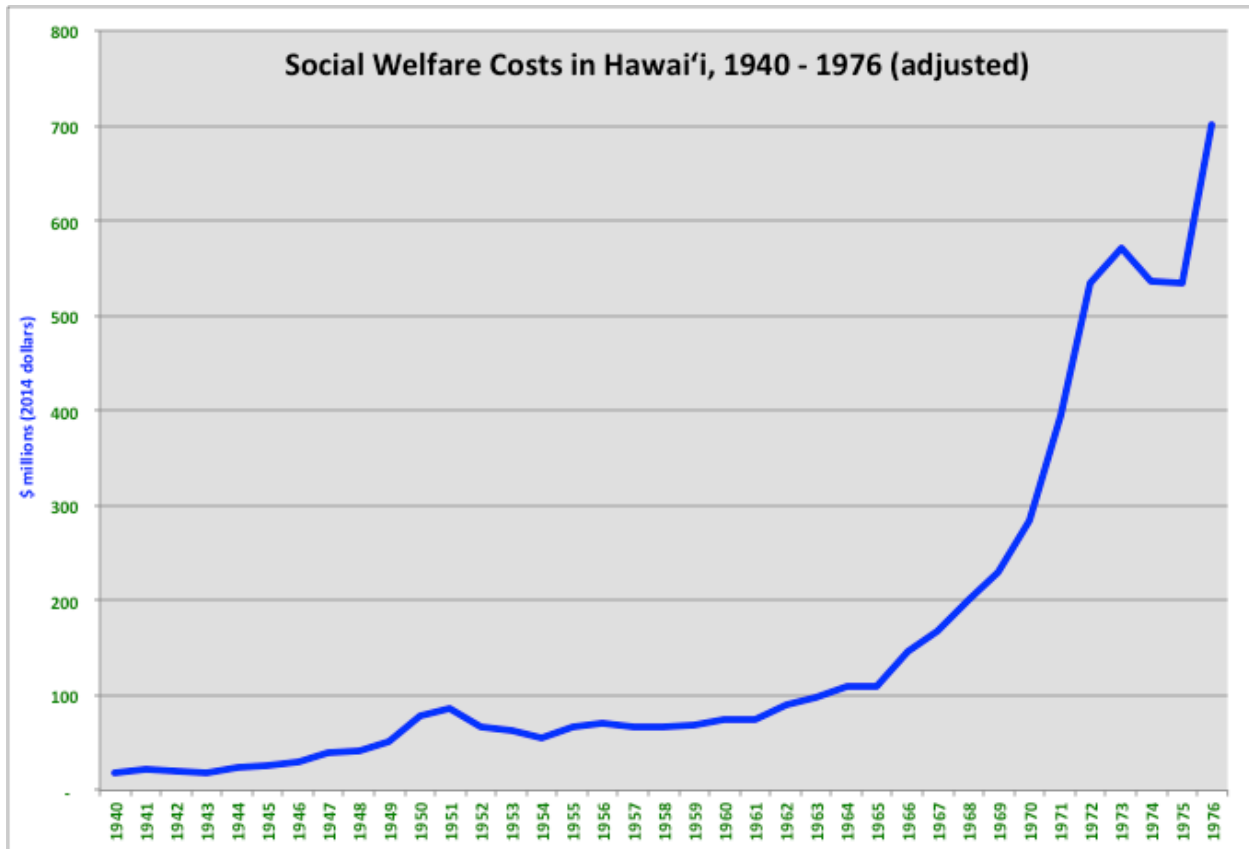
Source: Schmitt (1997), *Historical Statistics of Hawai'i*

With the rise in incomes among some Hawai'i residents, and especially as the tourist industry took hold, inequalities of income and wealth increased. More and more Hawai'i residents required social welfare payments. This is illustrated on Chart 23.

Many of the subsidies to individuals that were required resulted from inequalities that had been created during the plantation era. As Schmitt shows, the average white middle-class family in Honolulu earned an income of \$3,624 in 1937, while a Filipino plantation worker earned \$683 at about the same time (Schmitt, 1977). In 2014 dollars, these salaries amount to \$65,484 and \$13,262, respectively.

Moreover, children who grew up poor often lacked access to higher education or social promotion. Even if they moved away from plantation work, they were likely to earn less than someone who had been more privileged.

Chart 23: Social Welfare Costs on Hawai'i (adjusted), 1940 - 1976

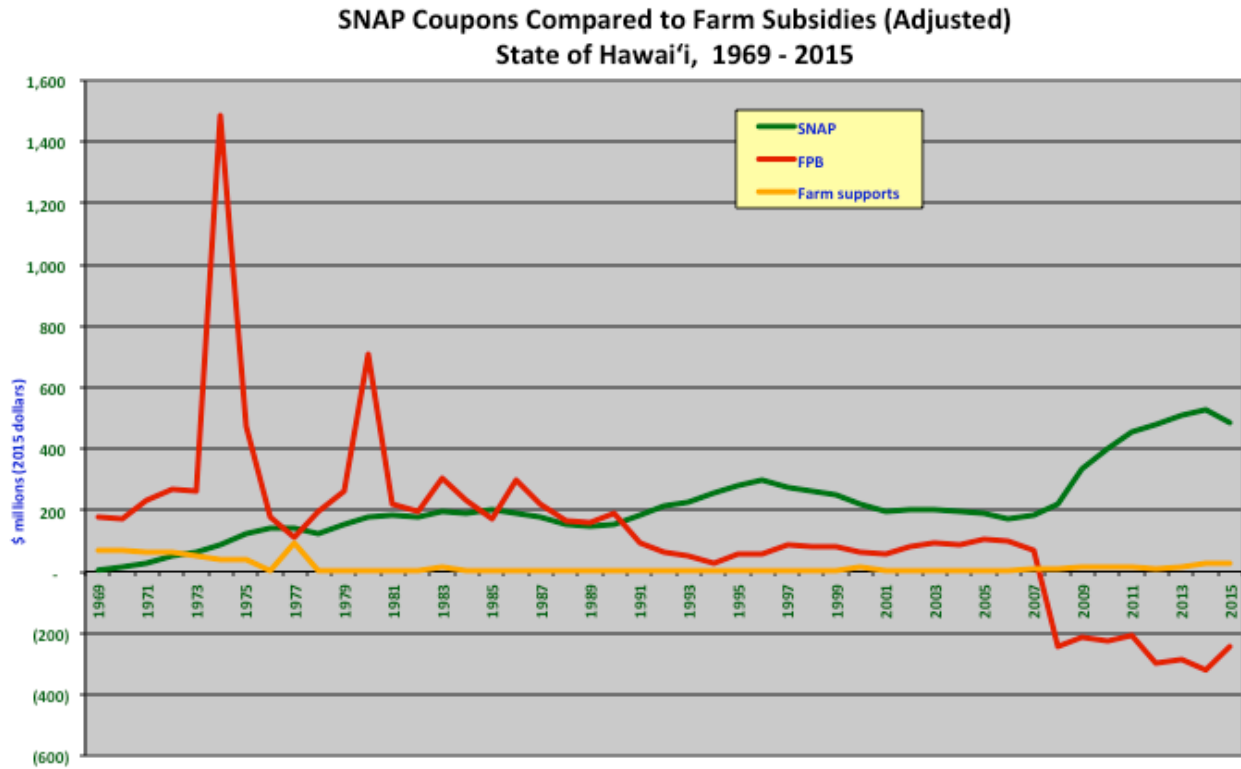


Source: Schmitt (1997), *Historical Statistics of Hawai'i*

By 1976, as the chart above shows, Hawai'i residents were receiving \$700 million per year (in current dollars) to cover welfare costs. At the time, the sugar industry was selling \$1 billion of sugar per year, with sugar prices propped up by federal policies that held the US sugar price above world levels using a combination of tariffs, nonrecourse loans, purchases, and supply management.

Today, benefits that increase personal income are nearly twice this level, at \$1.3 billion in 2014. Of these, nearly \$500 million are SNAP benefits. As Chart 24 shows, since 1991 SNAP benefits have been a more reliable source of income in Hawai'i than raising food on farms. Now SNAP recipients spend \$18.8 million purchasing food directly from farmers at farmers' markets. Their purchases now rival federal farm support payments in value (See also page 39).

Chart 24: SNAP Receipts Compared to Net Cash Farm Income (Adjusted), 1969 – 2015



Source: Bureau of Economic Analysis

Overall the financial legacy of the plantation system is deeply troubling. Whatever the short-term benefits that accrued to plantation owners, the long-term impact was that the Islands had moved from a position of feeding themselves to a place where collecting food stamps became a more reliable way of obtaining food than farming, especially for many urban residents. Food systems that ensured that everyone had access to nutritious meals had been supplanted by an agriculture industry that focused its attention on markets off the Islands.

Having started with a traditional culture that did not distinguish food production from community life, Hawai'i moved to a system that was largely shaped by public spending. As we will see in the next section, this public spending itself created long-term dilemmas.

Short-Term Subsidies Create Long-Term Dilemmas

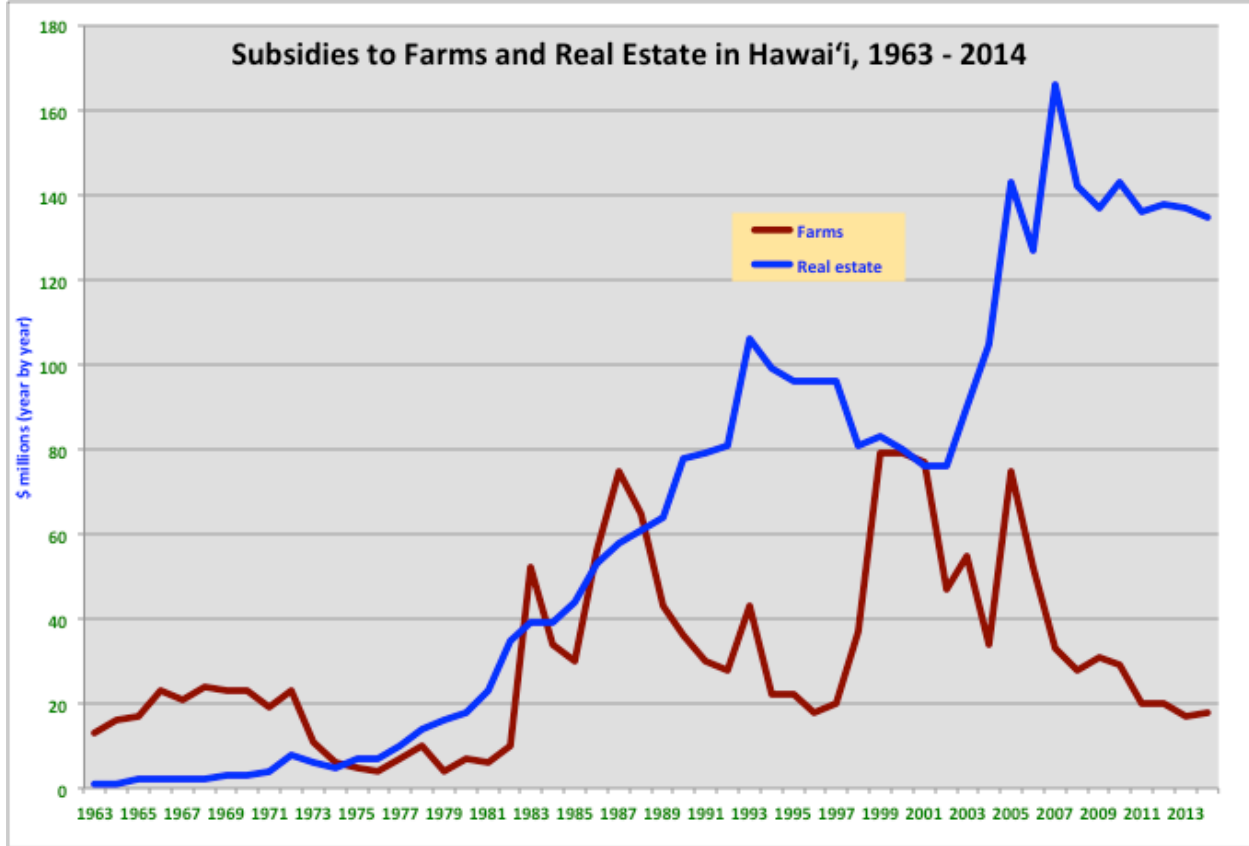
Individuals were not the only Hawai'i stakeholders to receive subsidies. With growers maintaining a dependency on fickle global markets, the Islands lost much of their ability to be self-sustaining. Hundreds of millions of dollars worth of food were imported each year, often to serve a rising tourist population that itself constituted a market shaped intensely by global forces outside of Hawai'i's control. Rising prosperity among professional and military workers heightened the demand for consumer goods that could not be produced on the Islands. Higher living costs meant lower-income people were relatively worse off. More and more Hawai'i residents depended on public dollars to survive. Many of these very cash subsidies, for example SNAP benefits or income supplements, were sourced off the Islands.

For the sake of our story about the food system, it pays to focus closely on how agricultural subsidies given during the plantation era actually helped create the need for further subsidies at a later time. To sum this story up in a nutshell, subsidizing plantations that hired workers at low wages meant that these workers, and often their descendants, could not afford to keep up with rising costs of living as the economy catered more to military workers and tourists. In particular, the regime of subsidies shifted from supporting plantations to supporting low-income housing for plantation workers, laid off plantation employees, and their children.

Chart 25, below, shows how subsidies to agriculture (these include state and other subsidies not shown on previous charts) declined as the plantation economy began to wane, in favor of subsidies to the real estate industry, primarily in the form of assistance to build low-income housing, often for former plantation workers or their children, as noted above and below. Those who purchased real estate obtained further subsidies by gaining lower property tax rates, but that is a story for a different report.

When we first encountered this data, we asked Bureau of Economic Analysis officials why it would be interesting for the federal government to subsidize real estate in Hawai'i, with its booming investment climate. Statisticians at BEA replied that these subsidies were primarily targeted for building lower-cost housing for plantation workers, current and displaced. The widening income gap, brought on by the heritage of low-wage plantation work, rising living costs due to the expanding tourism industry, and rising land prices, had created new needs.

Chart 25: Subsidies to Farms and Real Estate in Hawai'i, 1963 - 2014

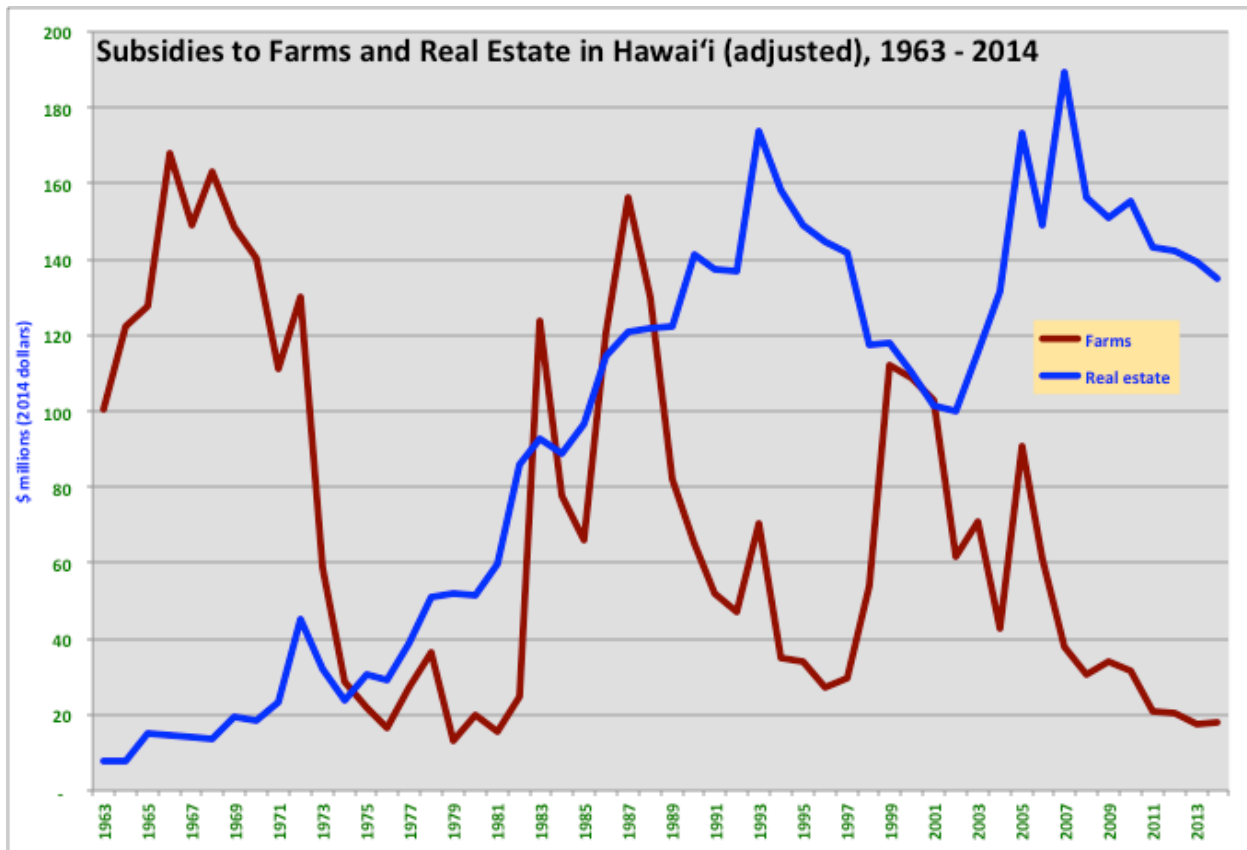


Source: Bureau of Economic Analysis. **Note:** Data from 1963 - 1997 are organized by Standard Industry Codes (SIC), a formula that was abandoned in favor of North American Industry Classification System (NAICS) from 1997 to the present. Although data from years earlier than 1997 cannot be strictly compared with later data, these numbers portray long-term trends fairly clearly, as long as limitations of the data are kept in mind. The category of "subsidies" appears to be the same in both data sets.

Once these numbers are adjusted for the cost of living, as Chart 26 below does, the true value of these subsidies in current dollars becomes clearer. Agricultural subsidies, which benefited a few plantation owners, were as significant financially as later incentives were for building low-income housing, often for thousands of plantation workers. Since 1988, housing subsidies have outpaced agricultural subsidies.

Ultimately, these real estate subsidies also constituted a retroactive subsidy to plantation agriculture, since they covered costs that had been externalized when plantations were making more money, but not paying workers enough (or giving them the freedom) to purchase or build their own housing. This also laid the foundation for poverty that now commands SNAP subsidies of \$500 million per year.

Chart 26: Subsidies to Farms and Real Estate in Hawai'i (adjusted), 1963 - 2014



Source: Bureau of Economic Analysis. **Note:** Data from 1963 - 1997 are organized by Standard Industry Codes (SIC), a formula that was abandoned in favor of North American Industry Classification System (NAICS) from 1997 to the present. Although data from years earlier than 1997 cannot be strictly compared with later data, these numbers portray long-term trends fairly clearly, as long as limitations of the data are kept in mind. The category of “subsidies” appears to be the same in both data sets.

Over time, government jobs, along with financial and real estate occupations have become far more significant to creating value in the Hawai'i economy than agriculture. This discrepancy of income was fueled to some extent by public policies, including incentives and subsidies that supported tourism, under the view that drawing customers from outside the state would be the most rapid path toward prosperity on the Islands. The interplay of financial subsidies also shaped political power in the Hawai'i

government. Yet this priority on exporting foods and importing tourists did little to build wealth for the average resident. In fact, it often held residents in low-wage jobs.

This preoccupation with off-island markets fostered the neglect of food production for state residents, and upheld a sense that state policy could focus only on agriculture, not food. Given the history of large plantations, it was natural to assume that only large farms and food businesses were worthy of attention. In truth, both large and small farm operations have played significant roles in food systems, and the state requires farms of all sizes in order to have a resilient economy.

Large-scale solutions have not always worked. Melrose said, “In the early 1970s the Kohala Task Force spent millions of public dollars to underwrite new businesses that promised to be large enough to absorb laid-off union labor, but to little avail.” Federal initiatives that distributed more than \$20 million to 90 agricultural projects covering 18,000 acres yielded mixed results, Melrose adds. Forestry and cattle became favored as landowners looked for ways to continue agricultural uses of their land. Yet tens of thousands of acres were simply sold, and the landowning corporations disbanded, losing their political presence as well (Melrose 2015, 18).

This had the further consequence of making it more difficult to farm. As Melrose concludes, “The sale of agricultural lands at prices that exceed the farmers’ ability to farm economically is one of the strongest forces working against sustained agriculture in Hawai’i” (Melrose 2015, 19).

Perhaps the most lasting legacy of the large-scale plantation was a stark dependency on outside resources. Fickle global markets distorted commerce away from a proper attention to local markets. Public allocations of state and federal money helped determine who would prosper. Those who wished to excel financially learned how to dovetail their interests with political trends.

As the next section shows, both small and large food system efforts have stepped forward to devise new ways of producing food. What makes these initiatives unique is that they engage community members in supporting social and commercial networks. This local loyalty is indeed the very core of their ability to sustain themselves financially. Working against potent odds and in the absence of supportive policy, each has built a small part of the foundation that will be required if Hawai’i is to successfully build community-based food trade in the future, thereby feeding itself and building health, wealth, connection, and capacity on the Islands.

Profiles: Building New Community Food Trade

Taking pragmatic steps to fill the vacuum created by the decline of plantation agriculture, working in a context in which there is little public planning to ensure food access for all Hawai'i residents, and with limited investment capital available to create food systems, a number of individuals, farms, organizations, and agencies have taken determined steps to build community-based food trade on their own initiative. While community-based, these efforts have been launched by large farms as well as small, by both larger and smaller organizations. These are profiled below.

On the island of Moloka'i, once dominated by pineapple and cattle ranches, Hawaiian farmers are now reclaiming indigenous farming practices. Several food initiatives have taken root on O'ahu and Hawai'i Island, as cultivation of traditional crops begins to attract youth who once felt cut off from a cultural heritage. Using techniques such as Korean Natural Farming practices, more intensive pasture management, and rotation of both crops and livestock, farmers are rebuilding soil fertility on former plantation lands. One farm on Lāna'i has been hired to use its animals to build soil organic matter on nearby farms. In learning centers like MA'O Farms in West O'ahu, and Waipā Foundation near Hanalei, Kaua'i, young Hawai'i residents are reasserting cultural values that had been lost through the emergence of commercial agriculture.

While specific examples will be offered below, we pause to outline the major actors who coordinate food networks in community settings.

Some initiatives are led by individuals holding a persistent vision of assisting their neighbors:

- Farmers
- Investors

Food system efforts centered around nonprofit organizations often penetrate more deeply into low-income communities:

- Food Banks
- Community Health Centers
- Food Hubs
- Schools
- Educational Nonprofits

State agencies have also played a role in helping establish the foundation for community foods, whether by supporting the above endeavors financially, or convening community stakeholders to identify key issues and develop community-based strategies. The DOH (through its SNAP-Ed program) is especially noteworthy in this regard through its determined support of grassroots networks on O'ahu over several years. The DOA has injected potent new energy into farm-to-school efforts.

By bringing together community stakeholders to engage in new food trade, each of these initiatives has constructed dynamic social and commercial networks. Each has practiced inclusivity and fostered diversity, values that were subdued during the plantation era, as explained above. These begin to define the new food systems of the future for Hawai'i. They are the essential foundation for creating the economic exchanges of the future, since economic multipliers cannot be built without supportive social networks.

During our interviews, we commonly heard the complaint that these emerging food system efforts are very small in proportion to the need. Indeed, they are. Yet they could only be small, given the lack of public support available to them, and given the tremendous obstacles that the prevailing food system places in their path by favoring imports. Moreover, their upstart energy positions them well to respond with great flexibility in changing circumstances — which both the demise of plantations and political uncertainty in the US government create daily.

The importance of these community-based food system players cannot be measured simply in economic terms. What is most potent about them are the visions they carry forward, the inspiration they offer, and most tangibly the social and commercial networks they create. At core, they are the foundation of a new culture that promotes self-determination.

Obviously, the farms and organizations profiled below are not the only ones that contribute to building community food systems. We visited many other excellent operations. Those profiled here stand out in terms of the networks they have built, but this is not to imply that others are making less of a contribution. We also note here that several of the larger farms who grow food for Hawai'i markets either declined interviews, or asked not to be quoted in this study.

'Nalo Greens (Waimanalo, O'ahu)



'Nalo Farms greens offered for sale at the KCC Farmers' Market in Honolulu.

One of the first farmers to realize the potential for growing food for local markets is the former president of the Hawai'i Farm Bureau, Dean Okimoto. In addition to forging his own farm operation against considerable odds, he has helped train several other farmers. By launching the Farmers' Market at KCC he has helped provide a place for several food entrepreneurs to connect to consumers.

Dean Okimoto took over his father's farm in Waimanalo in the late 1980s. After a disease wiped out the entire basil crop in 1990, Okimoto began to raise baby greens at the suggestion of Honolulu chef Roy Yamaguchi. These greens became the basis of his farm, now called 'Nalo Greens. He has shipped these greens, along with a wide variety of vegetables, to more than 100 restaurants.

Yet Okimoto says that like other farmers, he "sees the writing on the wall. Look at the cost of inputs. It just doesn't pencil out. All of the larger farms see it. Some have closed down. There's really only one farm who is making a profit. What he has done is amazing. He built a profitable business without developing a brand for his vegetables."

Okimoto continued, "We're treading water. There is more competition for me now than there was. That's fine, it's good to have new farmers." He is not one who would try to break in with a buyer once a competitor has established a market. But he does work to differentiate himself with his brand, and by explaining his farming practices.

Okimoto has even helped several new farmers get established. These include Green Growers (Hau'ula), Kahuku Farms (Kahuku), Ho Farms (Central O'ahu), and Waipoli Greens (Kula, Maui).

Yet he noted that markets are less reliable than they once were. Thanksgiving 2016 sales of Nalo herbs fell 30% below normal levels, he said. Some wholesalers had dropped their prices to one-third the rates he charges, presumably for products grown off the Islands. "It's hard to keep prices competitive when the large buyers enter the market. Even the restaurants that feature Nalo Greens were not buying. Most of the hotels could care less where their food comes from, with the exception of a few, like the Royal Hawaiian."

He said, "The only way for me to pencil out is to double my business." That, he added, was unrealistic. Besides, he continued, "If I were doing well I would retire. But then I would have to hire people and it would be even more costly [to farm]."

Okimoto added that significant marketing is needed to educate consumers. "We need to make the public aware of what is local and what is not. Grocers don't tell you where it [a food item] is from." He finds that many buyers are simply repackaging nonlocal food as "local."

He also suggested that the State, cities, or counties should develop agricultural parks where people can grow organically. "I spoke with the Mayor of Maui, Alan Arakawa, and he may set aside some land." Yet Okimoto cautioned, growing organically is harder in Hawai'i than anywhere on the planet. This concept would primarily work, he added, if farmers collaborate to manage the supply. "We need to coordinate so we don't grow too many cukes." He said he is in favor of farmer cooperatives. "We're going to have to move that way if agriculture is to survive." Further he foresees that the farms of the future will be large ones. "Unless the federal government is willing to scale back some of their monitoring, which is highly unlikely, the costs of farming can only be born by those who grow at a large capacity."

Okimoto has offered trainings to legislators to make the case for more support for agriculture, but found there was little interest. "[Agriculture] won't grow without way more money than they think it is worth. Look at the budget for the Department of Agriculture. It used to be 8% of the state budget. Now it is 0.4%. They are so overwhelmingly underfunded there is no way they can do [their job] well."

He added that his main concern is food safety legislation. Okimoto said the new FSMA regulations went into effect January 1, 2017 but the state says they have no money to enforce them, so these regulations will be enforced by federal officials in California. He believes that even farms that think they are too small to be inspected will be forced to gain certification, because buyers or insurers will insist on it, and this will frustrate growers out of business. "[Agriculture Commissioner] Scott Enright says we will lose 30% of our farmers once the regulations take hold. I think that is conservative estimate."

Okimoto also was pessimistic that the State had the power it once exercised to prohibit food imports. "You cannot put laws in place that discriminate against other states. You can set a preference if the price difference is not too great, but then the guys on the Mainland would lower their prices even more."

While Okimoto has helped build community connections by training new growers, helping launch a farmers' market, and serving as an advocate for local food production, the Ho farm, discussed next, has focused on building collaborations with grocers, and donating food to a food bank.

Ho Farms (Kahuku, O'ahu)

The second generation is taking over at Ho Farms, based in Kahuku in O'ahu. Neil Ho explained that the family arrived in Hawai'i in 1987, and started what we now know as Ho Farms four years later. Neil has been active in running the farm since 2008. He focuses on production while his sister handles marketing and sales, after her study in the mainland for marketing and international business.

The family now farms 120 acres, raising diverse vegetables including tomatoes, cucumbers, eggplant, okra, butternut squash, and oriental vegetables such as malunggay and long beans. The family farms conventionally, but has taken steps to reduce pesticide use through the years. Now they have dedicated 17 acres to organic production. In 2007, Ho Farms gained recognition from the Hawai'i Department of Agriculture through the Hawai'i Seal of Quality Program. The farm frequently donates food to the Aloha Harvest. All told, the farm employs 30 people.

The family makes a strong presence at the KCC Farmers' Market in Honolulu, and has established its brand at several grocery chains. Nonetheless, Ho recalled that the farm has experienced its share of complexity as it established its business. One of the early surprises was that commercial lenders were reluctant to make loans to a diversified farm operation. "The banks only want us to do the crops that are the most valuable. We wanted to be more diverse. They wanted to see a long-term lease agreement and we had none."

Their produce has been picked up by a variety of restaurants, but Ho said, "These are pretty random orders, though we enjoy talking to the chefs." They have earned more business selling in wholesale quantities. "When I started working at the farm we sold to middlemen who saw our products as another commodity," Ho said. "We spent our time haggling over prices when we knew the taste wasn't comparable." After such experiences, Ho Farms began to deal directly with local supermarket firms. "We went right to Foodland, and then Costco called us."

Having other outlets helped the farm restore a stronger relationship with their initial distributor, yet he added, "We don't really want to sell through intermediaries. We don't have an urge to export."

Ho added that the only way the food system can last is if people collaborate. "We have to work together. There definitely has to be a partnership with the buyers." Farmers also need to coordinate and diversify, Ho added. "We can't all be growing the same stuff," he warned.

Overall, the Ho family leases land from four different entities, and has five separate lease agreements. "It's difficult to get a long-term lease," Ho cautioned. "We need policies that give farmers access to land and water with a long-term lease agreement. We need to do this if we want a future for farming."

The Olson Trust

Another way of helping launch new farmers has been created through a private trust because one individual decided to use his wealth to create a more sustainable future for the Islands. In the process,

Ed Olson has produced a business cluster that fosters collaboration among several entities toward a common set of environmental values while taking advantage of vertical integration when it is possible.



Olson Trust farm in Ka'u

With a history in concrete and construction, Edwin Olson made his fortune through A-American Self Storage and other construction projects. As his wealth grew, he bought a condo on O'ahu, then one on Maui, and then a subdivision on O'ahu. He is now one of Hawai'i's largest individual landowners, having acquired land from the C. Brewer and Campbell estates.

Unlike other business investors, however, Olson is dedicated to agricultural preservation and environmental conservation on the Islands. This dedication was borne out of watching the sugar industry's collapse, and the way it displaced workers and residents, threatening agricultural lands and forests.

Not wanting to stand by while his beloved Hawai'i struggled, Olson began acquiring sugar plantation land and creating agricultural businesses. His largest holding is 10,000 acres in the Ka'u region. There Olson started Ka'u Farms Management Company to manage land leases, water systems, and a hydroelectric plant. Other lands, above Hilo, are managed by OK Farms, a partnership between Olson and the Keolanui family — a Hawaiian family with a history in agriculture.

As a result of this Ka'u acquisition, Olson began supporting a nascent coffee industry to create a new branding that would be different from Kona coffee. The Ka'u Coffee Mill, financed by Olson, opened in 2012, allowing area farmers to process and pack their crop locally instead of hauling it to Kona for what some considered rock bottom prices. The Mill also provides irrigation water for 80 nearby growers in Ka'u. Carefully crafted coffee grown in Ka'u has since won the Hawai'i Coffee Association Certificate of Excellence and Specialty Coffee Association of America Roasters Guild Coffee of the Year.

Other sugar plantation lands Olson acquired now contain vast swaths of macadamia nut orchards, including some of the OK Farms land, continuing a diversification effort by previous plantation owners. Consequently, the Olson Trust purchased the Hāmākua Macadamia Nut Company, which processes and markets 100 percent Hawai'i-grown macadamia nuts from 200+ Hawai'i Island farms, primarily from Ka'u Farms Management Co and OK Farms acreage. Island Nuts Trucking LLC, another Olson Trust owned company, transports the nuts, returning empty husks from the factory to Olson Trust farmlands for compost and mulching.

On O'ahu, Olson Trust manages 2,687 acres of conserved agricultural land under the name Palehua Ranch. This area contains a native species nursery and a telecommunications center, among many conservation projects.

"The Trust believes that agriculture, as a lifestyle, can be viable once again within the coming decades when coupled to right stewardship of the land and a sound sense of business. For food security, the economy, community, and the protection of precious cultural and natural resources, agriculture is a must," the Trust web site states.

OK Farms, Hilo, Hawai'i



Ala'amoe Keolanui of OK Farms

OK Farms is named after the partnership of Ed Olson with the Keolanui Family. The farm contains 1,000 acres of long-cultivated farmland above Hilo, located along the Wailuku River including Rainbow Falls. During high production seasons, the farm employs 35 people with very little turnover year-to-year. OK Farms focuses on tree crops — coffee, macadamia nuts, lychee, longan, citrus, cacao, heart of palm, other tropical fruits, and spices.

Yet OK Farm's primary crop is macadamia nuts. The original orchards on the property were not planted with mechanization in mind, making cultivating these orchards for profit difficult. Yet these trees, originally planted more than 30 years ago by C. Brewer, are declining due to old age. The Keolanui family is slowly taking out these trees and replanting. In recent years, the macadamia nut crop has kept the farm profitable. The nuts are roasted and packed by Hāmākua Macadamia Nut Company, an Ed Olson Trust company.

Six acres of award-winning coffee, packed under the name "Rainbow Falls Hilo Coffee" is milled and roasted by Ka'u Coffee Mill, another Ed Olson Trust company. Another 125 acres of coffee are cultivated in the Ka'u region and marketed separately from the Hilo coffee.

Most fruits are packed and sold wholesale across the state and to the North American continent, though off-Island sales on some products are waning. For example, newly acquired acreage included 50 acres containing 2,500 rambutan trees. These trees produce about 50,000 pounds of rambutan over a very short season. Previously, this product was sold largely to the North American continent, but increased regulation from the Department of Agriculture and competition from Central American countries has all but destroyed the export market. Troy Keolanui, manager of OK Farm, speculated that he may have to tear out the 50-acre orchard if he doesn't find a market for this fruit. He currently is able to sell just 500 pounds a week to resellers who vend at the local market. The Food Basket also purchases some for their fresh produce for CSA box distributions, but this is just still a very small fraction of the total crop. Keolanui reported that farmers across Hawai'i are plowing down acres of rambutan for the same reasons.

Longan and lychee, however, are a different story. Both have longer production seasons. Longan packs well for distribution to the North American continent. The surfaces of the longan and lychee fruits make them less likely to spread fire ants, or at least make them easier to inspect and keep clean — a key advantage for a crop destined for the North American continent. However, OK Farms is able to sell all of his production of these two fruits within the state of Hawai'i.

Another vital part of the farm operation is agri-tourism. New orchards are designed to accommodate tour groups. Some crops, such as cacao, are planted only for educational purposes. The farm receives a monthly fee from various guide services that bring tour groups through the farm. Visitors also stop by the gift shop where they can buy various farm products including coffee and various macadamia-nut products.

Regarding supporting and improving agriculture on Hawai'i, Keolanui wonders out loud about the types of jobs that are being created. He cautioned that agriculture is tough work. This particular model of a farm business, one that focuses on exporting commercial crops off the Island and into wholesale markets, is "not a way to grow food that feeds people, but it makes a living," he said. From Keolanui's perspective, he's creating opportunities for his family and a business to leave to them. Yet he realizes that he's lucky to be farming at all, since he doesn't "own one bit of land."

Looking towards the future, Keolanui wants to focus on "streamlining avenues of success" including streamlining food safety processes and certifications in order to get products into schools, hospitals, and care facilities. However, he is concerned that GAP certification and FSMA compliance will cost an enormous amount of money.

Yet he has found that working with the Department of Agriculture on overcoming the food safety hurdles and working with the Department of Education to source products to schools has not been a source of optimism. The Department of Education sources many of its products from the North American continent because it is cheaper to do so. Keolanui added that DOE requests for bids from Hawaiian farmers are often poorly timed, reflecting a lack of understanding, or care, about agriculture. He added that the Department of Agriculture is understaffed, constraining inspection hours at the Hilo airport. For example, during peak harvest, OK Farms runs long hours to maximize output. The Hilo airport is open until 7 pm, but DOA closes its inspection office at 3 pm. He suggested that the office needs to stay open longer during certain harvest seasons. Another suggestion he made is to provide some sort of "pass" for verified farmers and products so recognized suppliers can move through inspection more easily.

One concern Keolanui holds for the future of agriculture in Hawai'i is a new wave of sweet potato farming and the short-term thinking that it represents. Keolanui observed that these potato farmers lease land for three seasons, strip the land of its bionutrients, and then move on. Largely employing Hispanic migrant workers, and not collaborating with NRCS on conservation strategies, these farms persist in the process of extracting resources from rural areas. Keolanui is concerned about the long-term effects this latest cash crop will have on the land.

Kamehameha Schools (KS)

As Hawai'i positions itself to develop a culture that is self-determined and free from the trappings of the plantation mentality, it is difficult to imagine a statewide institution that is better placed to take solid leadership than Kamehameha Schools (KS).

This is not to say that KS will be the central institution, or that it will do this work on its own. Yet, as the heir to the legacy of both the Hawaiian Nation and the Bishop Estate, with a total endowment worth \$13 billion and owning about 8% of all the land on the Islands, and having adopting a sweeping cultural mission in recent years, KS holds great responsibility in this path.

As former Land Assets Manager Neil Hannahs put it, "It is absolutely vital to connect people to the land. It is like knowing your mother." He continued, "The word for land in Hawaiian, 'āina, means 'that which feeds us.' "

Pauahi Bishop's estate, the endowment that sustains KS and projects its sense of *kuleana*, encompasses more than 363,000 acres. KS says that about 169,000 acres of this land is zoned for agriculture, 189,158 acres are dedicated to conservation, 15,000 acres are in commercial use, and 3,000 acres support residential housing. This endowment generates income to run the school system.

KS recently adopted a vision that places itself in the middle of efforts to build a more sustainable future for the Islands. Their core principles are to support culture, community, education, economics, and the environment. All five of these intersect with food systems.

One way KS exercises this vision is to lease land to farmers who grow food for Hawai'i markets, and by encouraging residents to buy from these farms. As a landowner, it has also allowed community initiatives, such as the Waipā Foundation profiled below, to make use of KS land.

Waipā Foundation

Stacy Sproat-Beck, Director of Waipā Foundation, made significant contributions to this profile.

The Waipā Foundation is a Hawaiian-community based 501(c)(3) nonprofit located on the North Shore of Kaua'i. In addition to serving as a local food hub, the Waipā Foundation manages the ahupua'a of Waipā as a living-learning center in partnership with the landowner, Kamehameha Schools. The efforts at Waipā to engage community with the 'āina through food echo and help reclaim the former ahupua'a management traditions.



Taro plots at Waipā Foundation

As a nutritious, culturally rooted canoe crop, taro serves a central role in Hawaiian culture, of course, so this venture creates a solid presence in cultural renewal. Executive Director Sproat-Beck noted that the Hanalei region, where Waipā is located, “produces 85% of the poi taro grown in the state.” Much of that production is more commercial in nature. Several of our sources stated firmly that Waipā’s poi is the best produced in Hawai'i.

Waipā Foundation has been producing poi every Thursday as an 'ohana operation since the early 1980s. Utilizing primarily volunteer labor and distributing the poi around the island via a private subscription network, all 1,200 pounds produced weekly are pre-sold. Volunteers also receive a share of the product.

Sproat-Beck said Waipā's founding families launched the poi operation after noticing that commercially available products were not the quality they were used to, and "more expensive than a staple food should be." In addition to making poi, Waipā manages orchards, food-forest plantings, vegetable gardens and taro fields on different parts of the property, with a total of about 21 acres in production. The produce is utilized in Waipā's programming and sold to families through a local distribution network, to commercial accounts, and at Waipā's weekly on-site farmers' market.

As a living-learning center, Waipā aims to inspire a deeper connection between people and the land through experiential, eco-cultural programs. Nearly 4,000 people of all ages participate in Waipā's programs, working, learning, and sometimes camping on the land, Sproat-Beck added. They often enjoy meals prepared from the produce they helped to grow. She added that Waipā has changed many lives and inspired careers, as youth who have spent time at Waipā delving into gardening, farming, honing cultural skills, and pursuing higher education build livelihoods in those fields.

In 2015 Waipā completed construction on a commercial kitchen, poi mill, and indoor and outdoor meeting and cooking spaces. The kitchen is currently utilized by numerous food entrepreneurs from the community who sell retail (at farmers' markets) as well as wholesale. The new facilities are also utilized for culinary trainings and events, and as the center of weekly food and farm tours and dinners.

Waipā's staff team of 20 does everything from writing grants and other financial and administrative management and reporting, to farming, gardening, management of the ahupua`a, and coordination and facilitation of the projects and programs onsite. Staff are overseen by a Board of Directors. With more than 20 volunteers active each week, more than a hundred regular volunteers assist on an annual basis.

Waipā continues to grow and thrive, improve the productivity and quality of its land and resources, and practice resiliency when challenges arise. The next capital project that Waipā intends to tackle is staff and program housing.

As we will see in the next section, KS also supports a long-established training farm on leeward O'ahu that has established considerable commercial presence in Honolulu while training a dedicated core of youth leaders. This farm also exemplifies some of the dilemmas that growers face when they seek to grow food for Hawai'i markets, especially in low-income areas. Their story also shows how working through public schools can help connect low-income residents to food systems work, and it illustrates how building effective partnerships can help a smaller initiative go to larger scale.

MA'O Farms & Waianae Coast Comprehensive Health Center

Profile includes written contributions from Gary Maunakea-Forth, Amy Higa, & Terri Langley



Papaya orchard at MA'O Farms

One hour to the west of Honolulu in Waianae, a community-based food-growing and educational partnership has flourished, involving a farm, a health center, and schools. MA'O Farms operates a 24-acre organic farm that provides fresh produce to some forty restaurants and grocers in Honolulu, and runs a CSA that sells produce subscriptions to customers. Buyers told us that the farm has reliably provided excellent quality produce.

MA'O Farms is structured as a non-profit social enterprise. All farm operations are integrated into a single initiative for 15 through 25-years olds, with place-based experiential 'āina (land)-based programs providing youth a pathway to college, careers, and leadership. The core program is the Youth Leadership Training or YLT, and a college-based internship that hires about 40 young people to work the land, learn about Hawaiian heritage, and advocate for a more just food system. Each intern works toward a degree, and also receives a community food systems certificate after completing courses in farming, leadership, and liberal arts.

Interns and their 'ohana (families) are invited to come to the farm to help with the work in exchange for produce, and to learn about eating healthier foods. Often entire families will participate at one time; it is hoped their experiences in the program will foster new approaches in their home life.

WCCHC's Alicia Higa pointed out that their farmers' market in Waianae was the first one on O'ahu to accept EBT cards. WCCHC has also created a "double bucks" program so that each time a SNAP recipient spends a dollar buying from local farms, they receive two dollars worth of produce.

MA'O Farms' Terri Langley added that the farm sells most of its products in Honolulu because the "Waianae community is not able to support the price point we need." She says this with some authority, having run a restaurant in Waianae. Yet one of MA'O's founders, Gary Maunakea-Forth, lamented the fact that despite the state's dependence on food imports, and the demand for locally produced organic foods, 90% of the farm's food leaves for Honolulu. The farm delivers this produce directly to its customers.

In his work with the Waianae community, Maunakea-Forth has learned that working through the public schools is a fruitful way of engaging residents. He said in these conversations he has had "no difficulty getting people to understand what good food is." The difficulty lies in getting access to these foods at affordable prices.

MA'O Farms, he added, has outgrown the land available. "We need more land to grow more food." Former WCCHC staff Amy Asselbaye noted that there are immense tracts of land not far away at a US military base. Tall towers with sophisticated broadcasting equipment loom over flat pastures, built for security during World War II and still a part of the global defense system. "The military was supposed to give that land back after the war," she added, but it has not.

Maunakea-Forth gives credit to Kamehameha Schools (KS) for funding a large portion of the MA'O Farms' education programming, in fulfillment of the school system's commitment to strengthening Hawaiian culture. "They own 350,000 acres and have massive buying power," he said.

WCCHC invited us to join a conversation with several youth who have been involved. As farm manager, Christian Zuckerman has revived and expanded the nonprofit Kahumana Organic Farm, the oldest organic farm in the community, where Zuckerman grew up. The farm is only two blocks away from MA'O Farms. Kahumana Farm has 12 acres under cultivation with a total of 25 available. He recently became president of the Waianae chapter of Hawai'i Farmers Union United.

Another young leader, Derrick Parker, who rose to Farm Manager after eight years of farming at MA'O Farms, placed the food system conversation squarely in the middle of Hawaiian culture: "A lot of Hawaiians were disempowered by events years ago. Food is one part of this, but all of these problems are interconnected." To address these complex processes, he added, "We can create partnerships."

Indeed, MA'O Farms is now expanding a long-term collaboration with University of Hawai'i—West O'ahu (UHWO). Dr. Albie Miles, Assistant Professor of Sustainable Community Food Systems at UHWO, said the new initiative will allow MA'O Farms to increase organic production five-fold, making use of nearly 200 acres of fallow agriculture land near the UHWO campus, and expand its nationally recognized youth leadership training program. A proposed agriculture education center would include a farmer-training program modeled after the Apprenticeship in Ecological Horticulture at the University of California—Santa Cruz, and the incubator farm program, *ALBA*, located in the Central Coast of California. Miles

stated that the vision for the proposed center includes food-processing infrastructure, K-12 educational programming, community outreach, and applied research in agroecology. All are designed to enhance the sustainability and equity of Hawai'i's food system.

Dr. Miles added that this was one part of a range of new education, outreach, and applied research initiatives taking place at the UHWO campus, including a proposal to form a new *Hawaiian Center for Sustainable Community Food Systems*. "Decades of scientific research now supports the position that biological diversification of farming systems can significantly enhance ecosystem services from agriculture and contribute to long-term sustainability and resiliency."

Kōkua Kalihi Valley (KKV) Health Center

Profile includes written contributions from Kaiulani Odom and Kasha Ho'okili Ho



Vegetable field at KKV's garden at the Ho'oulu 'Āina preserve, on the heights of the Kalihi Valley

This spirit of inclusiveness in a low-income setting also characterizes the work of the Kōkua Kalihi Valley (KKV) Health Center in the Kalihi district of Honolulu. Founded in 1972, KKV serves a community that is 93% Asian, Native Hawaiian, or other Pacific Islander in ancestry.⁹

Historically, the Kalihi watershed was a self-standing ahupua'a and a pilgrimage site, with its highest mountain peak, Kilohana, serving as the cosmological home of Papahānaumoku, ancestor to all Hawaiian people. Now the valley cradles significant inequalities of wealth.

Kalihi hosts four large public housing projects, making it the first home for the majority of new immigrants to Hawai'i. In 2011, 37% percent of Kalihi Valley residents were foreign-born, compared to 18% statewide and 13% nationally (KKV, citing Federal Census data in a 2013 REACH Project narrative).

KKV patients are largely Filipino (31%), Micronesian (24%), Samoan (21%) and Native Hawaiian (7%) (KKV in a 2013 REACH Project narrative). KKV staff added that half of the patients it treats are best served in a language other than English.

One-fourth of KKV patients suffer from chronic diseases (cardiovascular disease, obesity, diabetes, asthma, cancer, hypertension, heart and renal disease). This is particularly true for Native Hawaiians and Pacific Islanders (2012 KKV Patient Data cited in a 2013 REACH Project narrative). Tuberculosis and sexually transmitted diseases are most prevalent among the infectious diseases. About 20% of KKV adult patients had diabetes as their primary diagnosis in 2012, compared to 10.9% statewide and 11.9% nationally.

Some of these conditions have roots in deeper dynamics. During community discussions, residents have expressed a deep concern about their disconnection from land and from sources of nutritious food, the dislocation many felt as migrants, and the glaring inequalities they endure, staff said.

KKV staff added that these conditions are exacerbated by inadequate access to affordable, nutritious foods. KKV cited a 2001 Department of Health study of hunger and food insecurity in Hawai'i, which found that Kalihi was the third-least food secure community on the island of O'ahu, with 28% of residents living in food-insecure households.

Yet KKV's Community Food Systems Strategist Kasha Ho'okili Ho added that summaries such as these only tell one part of the story. "Our community is inundated with indicators of deficiency – stories told through health and income indicators that name Kalihi as poor. The wealth of our community resides not in dollars, but in knowledge, in culture, in practice, and in love. Many of us still know how to grow our own food, many of us remember the stories connecting us to the land, we still hold our ancestors' voices, recipes, and daily practices of taking care of the earth and each other, and many more of us are learning."

Ho added, "We have learned that the most valuable opportunities for fostering abundance within Kalihi Valley lie within a return to cultural knowledge, pairing traditional practices and modes of exchange with

⁹ KKV cites the United States Census Bureau: American Fact Finder. "DP-1: Profile of General Population and Housing Characteristics: 2010, 2010 Census Summary File 1." Accessed by KKV June 21st, 2013. <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_SF1_SF1DP1&prodType=table>.

new pathways being forged between neighbors and markets within the community.”¹⁰

KKV fosters health by strengthening four kinds of connections among their constituents:

- Connection to place – To have a kinship with ‘āina (land)
- Connection to others – To love and be loved; to understand and be understood
- Connection to past and future – To have kuleana; a purpose in the world
- Connection to your better self – To find and know yourself

In so doing, KKV works with parents and children together, aiming to instill beneficial behaviors and cultural practices that sustain through several generations.

KKV creates several essential gathering points, including, Ho added, “the Roots Café, the “Farm-acy” (a farmstand) located in our health clinic, and a mobile market that brings cultural produce directly to the exam rooms of clinic patients, the exercise rooms of our senior centers, and support groups for diabetes patients.”

Strategies include a closely interlaced set of initiatives: growing new farmers, growing and sharing food (especially in public housing communities), sharing knowledge, establish a strong foundation of health within ‘ohana (family) and communal structures, providing community culinary training and communal cooking activities, building and strengthening networks of reciprocal exchange, fostering EBT and other food access, supporting community food entrepreneurs, striving to decolonize diets, and more.

During the course of working with Kalihi residents to eat better food, chef Jesse Lipman said, “We found we had difficulty navigating in the middle of a larger food culture. No matter how much kale we produced, people wanted to eat breadfruit, poi, and chicken — foods that had been part of that historical lifestyle.”

In a series of gatherings called “decolonizing our diet,” residents analyzed how the imposition of political control by the US had also inflicted harmful eating habits. Cultural nuances from 15 diverse cultures that are now represented in the valley were explored.

Through close discussions as these with their low-income neighbors, the staff learned not to impose their own assumptions. “The Micronesian language had no word for ‘exercise,’ but people understood gardening,” KKV director Kaiulani Odom said. So KKV launched community gardening efforts rather than narrowing the focus onto Western concepts of working out.

KKV staff understand that from an indigenous standpoint food is medicine. It is one of the many reasons Roots Café was created at the KKV Wellness Center. Open on Tuesdays and Thursdays, it serves both staff and the community. “We make the meals as organic, sustainable, and local as possible,” Odom said. “We work with 18 local farms (including our own Ho‘oulu ‘Āina) to produce quality meals that cost \$8 per plate. Staff chefs even crafted an alternative to Spam that has a similar taste, uses local pork and has no chemical additives. We found it is also very important to serve Polynesian carbohydrates such as taro, sweet potato, breadfruit, and tapioca.”

¹⁰ Ho, K. K. (2016). “Nurturing Waiwai in Kalihi Valley. Progress Report to W. K. Kellogg Foundation.

Approximately 10 years ago, KKV was able to take ownership of a 100-acre parcel of land in the uplands of the valley. This property had historically been a center for upland farming. KKV launched an effort to bring these cultural practices back. The farm raises *kalo* (upland taro), *'ulu* (breadfruit), traditional medicines, and vegetables. Here, youth learn the culture and knowledge of their ancestors, practical farming skills, and practice speaking out on behalf of their own vision for the future.

Over time, staff realized how important *'āina* was to the overall concept of health, fostered by reconnecting to the land. "A lot of things happen through work," Odom said. Growing, preparing, and eating food together were the connecting forces. These create connections to the land, to the past and future, to one's better self, and to others. "We continuously make plants available to our community," hoping to foster deeper connections.

Yet amidst a broader culture that is based on markets, growing food and medicine in a manner that ancestors had accomplished under a supportive infrastructure is not always economically sustainable under colonial values and conditions, Odom added. "It takes effort to keep this work going while holding on to cultural values. Daily, we balance our work to make food available and affordable, to support local farmers and sustainable agriculture, to integrate health and to honor the ancestral wisdom of our kupuna."

While there "may come a day we cannot get grants," this work is sustained largely by fundraising as much as \$750,000 to \$1 million each year, Odom continued.

KKV also swims upstream against bureaucratic forces. "This is hard to do under a federally qualified health system," with medical rules that have been imposed from Washington, seldom in ways that are responsive to proven traditional practices. Government officials often press KKV to engage in more behavioral change work. "We don't do a lot of that," one evaluator for KKV said. She finds herself measuring progress in terms of "cultural shifts." Often this is tracked through stories, which is the medium of cultural exchange that resonates across — and helps build — community networks.

Our sources said KKV has set in motion a critical transformation in the Kalihi Valley. It has forged a scientific and professional consensus that it is important to create and regenerate a *culture* that supports health. What fosters this culture most effectively is working together on the land in a sustainable manner.

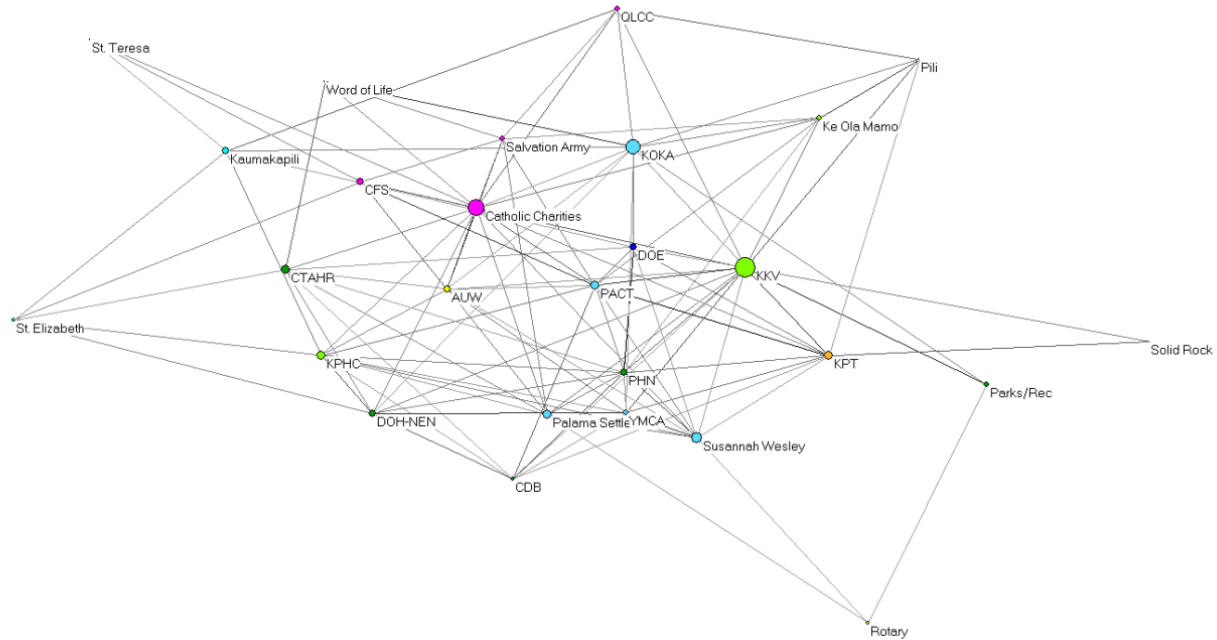
After running hundreds of cooking trainings through the YMCA of Honolulu, Director of Children's Programs Diane Tabangay concurs. Making use of Kapiolani Community College's "Cooking Up A Rainbow" curriculum, as developed and implemented by Daniel Leung, Tabangay has repeatedly found that "Training needs to be hands on." Even excellent culinary training may also depend on knowing other skills. In related work across the US, practitioners have learned that young people who know how to grow food can more readily appreciate the importance of eating well, and are motivated and able to prepare fresh food items.

At The Towers of Kuhio Park housing project not far from KKV, Social Services Director Anni Peterson has witnessed the difficulties that arise when a migrant population is disconnected. She can encourage the largely Micronesian residents of the project to eat traditional foods for health, yet "Even these are too expensive at the store," so such lessons often get overlooked in daily life. "Traditional foods used to be cheap at the store," she added, but "grocers, recognizing the demand, have raised the price." This is why the project has launched community garden and 'edible landscape' initiatives. To date, she said, 15

food-bearing trees, such as 'ulu, mountain apple, mango, lemon, and lime have been planted around the property. They plan to plant more on Hawai'i's Arbor Day in November.

A 2012 network analysis completed by O. Vanessa Buchthal¹¹ (see below) shows that KKV is a central hub within the social network of Kalihi Valley, with extensive partnerships that connect community members to services and to one another.

Diagram 3: Network Connections Made by KKV



Source: Buchthal & KKV

¹¹ O. V. Buchthal, 2012. PhD Dissertation "Inter-Agency Communication and Collaboration Patterns for Nutrition Promotion in a Low-Income Multi-Ethnic Community."

Additional Community Partners in KKV's Community Foods Work (Source: KKV)

AlohaCare	Kapiolani Community College Culinary
Breadfruit Institute	Arts Program
Cades Shutte	KEY Project
Eating in Public	Kolea Farm
EJ's Market	Linapuni Elementary School
Friends with Farms	Lucky Farms
Haloa's Poi	Luluku Farms
Hawai'i Good Food Task Force	Mohala Farms
Hawai'i Venison	Paco's Wholesale Fish
Ho'aipono	Parents and Children Together
Ho'okuaaina	Sisou Farm
Ho'oulu 'Aina	Susannah Wesley
Homestead Poi	Sustainable Lana'i
Ilio Iani Farm	The Food Basket
Islander Institute	University of Hawai'i College of Tropical
Kako'o 'O'iwi	Agriculture and Human Resources
Kalihi Palama Health Center	University of Hawai'i Office of Public
Kamuela Produce	Health Studies
	Waianu Farm

Sustainable Moloka'i (Moloka'i)

Profile includes written contributions from Harmonee Williams, Food Security Program Manager of Sustainable Moloka'i



The Sustainable Moloka'i Mobile Market connects local farmers to individual consumers through online software. They then aggregate and deliver the orders at weekly drop-off points across the island. Photo by Sustainable Moloka'i; used with permission.

Harmonee Williams, Food Security Program Manager for Sustainable Moloka'i, told our team that the organization addresses a broad range of sustainability concerns, including financial literacy and watershed restoration, but that it is their "food work that is moving forward the most." When the organization surveyed 250 of the Island's 7,300 residents 5 years ago, 98% said they would eat more locally grown food if it was readily available and affordable.

Over the past few years, Sustainable Moloka'i has obtained several substantial grants aimed specifically at strengthening the organization's efforts to re-build the local food system on the island. Once a center for fishponds, taro, and sweet potato production, and later for pineapple and coffee plantations and cattle-raising, Moloka'i's agricultural economy is now dominated by Monsanto's and Mycogen's GMO seed corn production. Moloka'i Ranch, formerly a large-scale cattle ranch, currently has a significantly

smaller herd, and is owned by an investment holding company based in Singapore, whose long-term goals are not clear to residents, Williams added.

One centerpiece of Sustainable Moloka'i's efforts has been to increase the island students' consumption of local fresh fruits and vegetables. By working with the State Department of Education's School Food Services, the Sustainable Moloka'i Food Hub has become the vendor for the USDA Fresh Fruit and Vegetable (snack) Program. This program allows the group to purchase produce from local farmers and serve it directly to elementary school students. In addition to the food, students are given a brief lesson on how each food item was grown, where on the island it was raised, who raised it, and its nutritional value. Often, Williams said, the farmer is related to at least one of the students in each classroom.

The organization has hired FoodCorps and AmeriCorps Members to maintain school gardens in the elementary schools. These become classrooms where students gain practical experience that is integrated into science, math, and other curricula. Sustainable Moloka'i has also partnered with Moloka'i High and Middle Schools to develop a 2-acre permaculture farm where older students gain hands-on experience raising food in sustainable ways.

Williams hopes that over the long term the island will have a core of graduates who will continue to care about farming and eating fresh, local food for the rest of their lives. This will create a network of adult residents who can foster self-sufficiency for Moloka'i.

In 2016, Sustainable Moloka'i launched a Mobile Market that delivers food grown by Island farmers directly to local consumers who order food items weekly using online software. Jamie Ronzello is the Manager of the Mobile Market. She notes that one of the primary benefits of the Mobile Market is that it really helps beginning farmers, since they name their own product prices and post the quantities they have available each week. "It takes pressure off of farmers to have consistent production at the start-up stage," she said. Ronzello is a farmer herself as owner of Barking Deer Farm. The Mobile Market also accepts EBT, which increases the accessibility of these fresh, local products.

Williams concluded by stating that their overall goal is to help Moloka'i return to its abundant past, and once again be food sovereign and secure; and not dependent on barges for food. She recognizes this is a long-term vision. She added, "Food security is a global issue that affects us all and needs creative strategies, which we are working to develop." So far she has learned "The best way to get to people is through the schools, through their 'ohana nights.' "

University of Hawai'i Extension Moloka'i

Extension agent Glen Teves follows a parallel path, working with small farmers and gardeners across the Island to assist them in growing and harvesting food for themselves, on an island with limited grocery shopping options. More than one-third of the population lives below living wage levels, so his task is urgent. "We're trying to create our own system of food production," he said. "Our strength is the willingness of farmers to work with each other."

Teves has worked with others to reclaim the heritage of raising fish in fishponds that once dotted the coastline. Several of these ponds have been refurbished, but he added, "We've had very little harvest so far." The ponds continue to silt up if not maintained, and their waters suffer from both pollution and invasive species. Teves added that "there are many other obstacles to using fish ponds." Permits to raise

fish in the 18 working ponds cost more than \$30,000 each, he said, and federal laws specify they can only be used for subsistence, so it is difficult to earn income to cover these costs.

Many Moloka'i residents depend on hunting some of the 25,000 wild deer that live on the Island. Yet Teves said, "It's really tasty meat, not gamey at all, but it is a time thing." Not everyone can find the four hours it takes to break down a deer carcass and store the meat in a freezer, even if successful in the hunt. Those who do, he added, find that their families benefit from sharing the duties of subsistence activities.

He thinks solid inroads have been made in agriculture. A DHHL peer-to-peer grant engages 25 Island families to learn and refine Korean Natural Farming techniques, essential for rebuilding soil that was depleted by pineapple production. If left to chemical applications alone, he added, "Those lands have low pH and are calcium deficient, and it can cost \$1,000 per acre to apply lime." Teves said drip irrigation has been installed in many Island gardens. "We've been trying to build an active seed saving alliance in order to grow, maintain, and exchange open pollinated varieties. Farmers have been sharing taro plants for others to plant. Teves said the Island is a great place to grow 'ulu, bananas, papayas, eggplant, sweet potatoes, long beans, chard, kale, and pak choi. Farmers have learned to extend the growing season for some of these plants. Yet many residents are still unfamiliar with eating these foods.

While more than 130 35-acre plots of land have been awarded to homesteaders in the Hoolehua area, he said, many of the applicants lack experience in farm production and business management. "Access to capital is also a major stumbling block."

"Agriculture is one of the most difficult professions to get into," Teves continued. "You've got to work your butt off. My job is to get people charged up, and to make sure they know what is ahead of them."

As one example, Teves explained, those who want to raise chickens on the Island have to import feed, but production costs are high and one has to compete with mainland mega-farms with low costs of production.

He mused that, "You don't understand food security until you don't have any food. People on Moloka'i are vulnerable because of their distance from urban centers." Yet, he added, "As long as you have a car and can drive to Costco or Safeway, there is not a lot of seriousness about producing your own food. It is an ethic that needs to be instilled in the educational system, from kindergarten all the way up."

The Kohala Center

Founded in the year 2000, The Kohala Center on Hawai'i Island is an independent, community-based center for research, conservation, and education. With a focus on food and energy self-reliance and ecosystem health, the organization translates research and knowledge to support for thriving, 'āina-based communities. Its role in food system development is primarily to assist those who are building commercial food trade in community contexts, supporting these efforts through fundraising, research, and policy initiatives, said Vice President for Programs Nicole Milne.

The organization was largely born out of a call from the community for more resources to build healthier society. Today, a broad portfolio of Kohala Center programs — Hawai'i Island School Garden Network, Rural and Cooperative Business Development Services, Hawai'i Public Seed Initiative, Kohala Watershed Partnership, Kahalu'u Bay Education Center, and the Mellon-Hawai'i Doctoral and Postdoctoral

Fellowship Program— are recognized for their individual and collective impacts.

Developing such model programs is only one of the ways that The Kohala Center fosters change in Hawai'i communities. For example, the Hawai'i Island School Garden Network was launched to increase the number of learning gardens in Island schools, instill an appreciation and desire for fresh fruits and vegetables among schoolchildren, and advocate for local farm to school procurement programs. Now over 50 school gardens operate on the Island and there is a statewide Farm to School-School Garden Hui.

This network serves as a model for the state's public school system, including common menu cycles that incorporate Island-grown products, cooking classes, STEM-based curriculum, and supply chain development. Coordinator Donna Mitts explained that it has been easy to engage participants. When they hear there is a chance to work on both education and food, they say, "Sign me up!" To sustain this work, these volunteers have formed a strong support network.

The Network's efforts have mainly been embraced by charter schools so far. These usually have more funding flexibility, but Mitts is hopeful that DOA and DOE will eventually embrace these projects as well. As a step toward this future, The Kohala Center worked with both agencies, the Appleseed Foundation, and the Lieutenant Governor's Working Group on Farm-to-School. Through this collaboration, a national expert was hired to work with three schools in the Kohala region to develop new menus and revive scratch cooking and procurement of local food in a public school cafeteria.

Supply chain development work also includes providing support for farmers through Rural and Cooperative Business Development Services, which provide grant writing and loan application assistance, business planning services, legal support, low interest microloans, seed-saving coordination, and beginning farmer education programs. The response to the loan programs has been overwhelming, said coordinator Hanna Bree. As of August, 2016, there were 4-6 active clients with another 15 pending applications and inquiries. While financial resources are needed, Bree remarks that it's the technical assistance that is the most appreciated and valuable.

This is a common sentiment among small farmer support circles. It's not so much the need for access to capital but that most people aren't capital ready. Milne echoes this concern speaking more broadly of food entrepreneurs. "We are not convinced that people who are going into commercial production have a broad appreciation for what all is involved." Thus wrap-around services that embrace the full person, and the uniqueness of their own talents, are essential to the successful development of new food systems.

The Kohala Center also assists efforts to build the infrastructure required for future food systems. This has included helping to develop new models for solar-powered equipment, innovative approaches to on-farm cold storage, and sometimes documenting existing capacity. One project included an inventory of all the nearby community kitchens to see what food processing opportunities they could support, before considering new facilities.

Staff at The Kohala Center also develop policy frameworks and tools for decision-making. As one example, Milne pointed out that in Hawai'i, "Small-scale farming will have a larger role to play than in the rest of the US. Given issues such as water rights and tax abatements, the Islands will even "need to define what a farm is. I don't think it will be the same definition as on the Mainland."

Food Bank Helps Build Food Systems

One key element of the work of The Food Basket on Hawai'i Island, as noted earlier, is its close and strategic collaboration with local growers. The food bank buys food from nearby farms to distribute to low-income residents, as reduced-cost purchases through their "Da Box" CSA program.

Like the health centers profiled above, The Food Basket has assumed the role of helping to build a community-based food system. This means they have worked closely with avocado and breadfruit growers, helping them to develop new markets and gain more income.

By connecting with these growers, The Food Basket has helped build a potent cluster of community food activity. One of the groups they support is a new 'ulu cooperative. This is an intriguing effort to take a traditional crop and package it for contemporary, commercial use.

Hawai'i 'Ulu Producers Co-op (Hawai'i Island)



'Ulu (Breadfruit)

One group of 13 growers on Hawai'i Island formed a cooperative in order to collaborate in developing an industry that can sustain production of one of the most nutritious canoe crops, 'ulu (breadfruit). A nutrient-dense, low-fat starch, 'ulu is rich in calcium, magnesium, amino acids, and several essential vitamins. Yet it was overlooked as Hawai'i moved toward Western diets with processed foods.

‘Ulu is also an interesting crop in terms of soil health, since it is a perennial tree that does not require tillage. Co-op member Jackie Prell pointed out that each tree begins to produce fruit in just a few years.

Co-op manager Dana Shapiro told us that the group includes farms located across the Island, which ensures a more consistent year-round supply. Growing in different locations allows the co-op to take advantage of varied microclimates having complementary seasons, while geographic diversity helps buffer against natural disasters such as drought and hurricanes, which can have devastating effects on ‘ulu harvests. The co-op plans to manage the entire process from plant to product. “Vertical integration is absolutely critical,” Shapiro said. Each member of the co-op paid \$100 to join, which is reimbursable should they ever choose to leave.

With the help of ‘Ulupono Foundation and The Food Basket, the co-op is developing processing capacities that can peel, steam, and freeze the flesh of the breadfruit for lasting shelf life. One-pound packages for retail sale and five-pound wholesale packages are available.

Currently, the co-op sells fresh and frozen quarters of two varieties of ‘ulu — Hawaiian and Ma‘afala (one of many Samoan varieties). ‘Ulu is sold at three different stages of maturity as well. The co-op said young breadfruit can be pickled, marinated or used like a vegetable in salads and stir-fries. More mature fruit can be cooked in ways that are similar to potatoes. Fully ripe ‘ulu is said to resemble a tropical sweet potato in flavor, and is cooked for desserts or used as an ingredient in baked goods.

The co-op recently announced the availability of new value-added packaged products: **hummus** made with mature ‘ulu, and **a mousse** made with ripe ‘ulu and organic, fair-trade dark chocolate. The Food Basket and Armstrong Produce help to provide distribution of the co-op’s products to Island customers several days each week.

Farms and farmers currently participating in the ‘ulu co-op include:

- ‘Ano‘ano Farms (Hāmākua)
- Evan Belaga
- E-Scape Enterprises (North Kohala)
- ‘Io Ag, LLC (Puna)
- Kohala Institute (North Kohala)
- Kona ‘Ulu (South Kona)
- Māla Kalu‘ulu Cooperative (South Kona)
- Uncle Sam Keliioomalū
- Mo‘oloa Farm (Puna)
- Jerryl Mouhili
- Mike Nakada
- Naniseni Farm (Hāmākua)
- Sweet Cane Café (North Hilo)

Government Initiatives and Visions

Jeffrey Melrose, who has produced solid and comprehensive data about agriculture on the Islands, notes there has been a sea change in state policy: “People are talking about food now, and not commodities.”

Yet the state's first steps seem to emerge from cash crop mentality more than a commitment to renew a culture of food production.

Governor David Ige recently made a commitment to double food production by 2020. Many of our sources questioned whether this was a worthy, practical, or even achievable goal. Yet Hawai'i state agencies have already made a \$40 million investment in infrastructure to foster large-scale agriculture in Central O'ahu. Under the leadership of Sen. Donovan Dela Cruz the state has purchased 2,200 acres of former pineapple land near Wahiawa, 24 acres at the former plantation workers' camp in nearby Whitmore Village, and a 30,000-square foot former grocery warehouse now intended as a packaging and processing facility. Planning meetings for this Whitmore Agribusiness Tech Park were held in September 2016.

Ige also called for developing water and energy resources to support his agricultural initiative, including providing more land for farmers and increasing farm lending. Yet the Agricultural Development Corporation's web site states that the deadline for farmers to submit applications to make use of the land was April 5, 2013.

The Trust for Public Land assembled the \$25 million purchase price for the initial 1,700 acres of the Galbraith site in Central O'ahu from a variety of sources, including \$13 million from a state general obligation bond; \$4.5 million from the US Army; \$4 million from the City and County of Honolulu Clean Water & Natural Lands Fund; \$3 million from the Office of Hawaiian Affairs; and \$500,000 from D.R. Horton - Schuler Division.

Several questions arise concerning whether such initiatives can address the food needs of Hawai'i's 320,000 residents living below 185% of Federal Poverty Line. Can agriculture be carried out at this scale without replicating the inequalities inherent in plantation agriculture? Can Hawai'i develop cultural patterns and worldviews that transcend a plantation mentality? Can there even be a Hawaiian culture in the future without returning to traditional practices?

The state's most promising role would be to construct gradually, over several decades, the infrastructure that promotes a post-plantation food system. As our interviews have so clearly shown, food leaders in the state are most significantly limited by the prevailing infrastructure and its dedication to former plantation owners and export crops. As one interviewee, who preferred to remain anonymous, put it, "What is [currently] economically sustainable is not where we need to go."

The Future of the HC&S Sugar Acreage

On December 31, 2016, Alexander & Baldwin (A&B) closed sugar production on 36,000 acres of land on Maui. This marked the end of the plantation era in Hawai'i. Now HC&S officials are formulating plans for converting the use of this land to smaller-scale farms.

The company lists the following priorities: energy crop research, raising grass-finished livestock, food and orchard crops. Company spokesman Jerrod Schreck said that, "Our vision for diversified ag is to create a patchwork of smaller farms supporting a variety of crops by farming some of the land on our own, partnering with others, and leasing land to other farmers."

The firm is now testing production of different pasture grasses on approximately 4,000 acres of land as one step toward the development of a grass-fed beef industry. By raising forage on the Island, the firm hopes to avoid shipping costs that have limited efforts to raise corn-fed cattle elsewhere in Hawai'i.

A&B is also asking Maui County to form an agricultural park on company lands near the existing Kula Ag Park. Former employees will receive preference for leasing lots to farm. "These are some of the best ag lands for diversified crops that we have," he added.

Schreck added that while the firm will focus on farm production, "We believe the highest and best use of these lands is for agriculture, and stand ready to support the establishment of viable agricultural operations, recognizing that this requires a successful system from farmer to consumer."

Rick Volner, the general manager of the Hawaiian Commercial & Sugar Company, broadened this statement at the Maui Energy Conference on March 23, 2017. "Food and energy. It's always been made out that there's competition because there's a finite amount of farmland," Volner said. "If you design agricultural systems correctly, they'll actually complement each other" (Maui News 2017).



Food preparation at Waipā Foundation kitchen.

Conclusions

1. Agriculture in Hawai'i is quite vulnerable. Many of the state's farms report they are losing money, or earning a small margin. This is in part because the policy discussion concerning food has typically been limited to discussions of farms and natural resources (land, water), rather than food systems. With a limited tradition of family farming, the state has little infrastructure supporting family farms.

2. There is a strong market for food on the Islands. Hawai'i consumers spend as much as \$6.8 billion each year (85% of \$8 billion) purchasing food sourced off the Islands. Visitors and tourists are not included in this total.

3. The infrastructure to connect family farmers to consumers in ways that build community health, wealth, connection, and capacity is lacking.

4. High land costs and high input costs represent substantial barriers to new initiatives. This means that only people with considerable wealth can typically launch commercial farms. Farms that wish to be commercially competitive are themselves selling to highly concentrated distribution channels, so they must produce in considerable quantity in order to assure their products will be carried by major distributors to supermarket shelves. Yet farmers typically lack market power when they engage with wholesale markets; as price-takers they are deeply vulnerable.

5. Low-income residents spend billions each year buying food, but are not well served by commercial markets, which cater to those with disposable income. As long as poverty is created in a sustained manner through economic structures that create inequalities of wealth and income, low-income residents will require permanent assistance.

6. SNAP benefits provide \$500 million in essential added purchasing power to low-income residents. They also turn out to be a more important way to access food in Hawai'i than farming itself. Yet residents who qualify for another \$100 million of SNAP benefits are not yet enrolled; to enroll them would bring new money into the state.

7. Food banks, community health centers, schools, and educational nonprofits have taken the lead in building community-based food systems that create access to low-income residents. Several individual farms and investors have also played this role. Public agencies have at times supported these efforts.

8. Community workers have learned that when low-income residents gain skills in growing food, this motivates them to purchase and prepare fresh foods and helps them learn food preparation and processing skills. Receiving food distributions, or using SNAP benefits, places people into a more passive role with less skill development, although this is tempered by the fact that SNAP benefits may be used to purchase seeds and seedlings.

9. Small-scale models are just as important to constructing a resilient food system as fostering larger farms and businesses. A healthy local food system requires both small-scale entry points and more established producers; otherwise, there is no way to start a farm or food business, and limited ability to respond to changing consumer needs.

10. Hawai'i's cultural heritage is constructed around caring for land and water, growing and fishing, and sharing this food with others. Providing food to extended *ohana* networks was not done for

financial or economic gains. This food was neither sold nor bartered. It was provided to all who lived in the same *ahupua'a* (watershed). The entire system relied upon renewable energy forms and mutual support. If this process of stewardship is not continued, there is no reason to believe a unique Hawaiian culture can be passed on to younger generations.

The food system of the future will involve the co-creation of a *culture* that sustains and prioritizes self-determination, including food access for all.

Additional Concerns

Although it is beyond the scope of the present study to comprehensively analyze a complex range of issues that critically affect food production across the Islands, we would be remiss if we don't mention briefly a set of concerns that will need to be addressed in order to have healthy food systems on the Islands — whether for low-income residents or those who are more prosperous.

1. It is important for Hawai'i to commit itself to building *community-based food systems*, not simply farms or food production programs. No approach that is limited in scope to “agriculture” or “land” or “capital” or any other narrow focus can encompass the complex web of interactions that are involved in water use, soil building, energy sources, social status, consumption, cultural regeneration, health, wellness, and other issues that are so intimately connected to raising food. Unless the approach is holistic and rooted in community, it will provide simplistic answers that will lack popular support, continue wealth extraction from rural areas, and increase disparities.

2. Critically, this means that it is not enough to build farms that produce food for local markets; it will be important to *build communities* through processes of renewing agriculture and constructing local food systems. Community networks, built through inclusive community processes, will in turn build economic exchange and local multipliers.

3. While fee simple access to land is important in a Western legal context, and appears to be important in creating economic motivation in a commercial setting, there are substantial contradictions inherent to systems of private land ownership in the context of Hawaiian culture. If enclaves of traditional production are to survive, these dilemmas will need to be addressed. Nonprofit or public ownership of cultural enclaves may achieve some of this balance.

4. Similarly, due to development pressures and the accompanying rise in land values, most land in Hawai'i is priced at values that cannot be sustained through food production for Hawai'i residents. To the extent that land is owned or operated by individuals at all, it must be made available at purchase prices or lease rates that are appropriate to the land's agricultural value, not to development or speculative value. This economic reality suggests that efforts to ensure that communities have permanent access to farmland for food production dedicated to local residents will be crucial.

5. In a well-intentioned effort to protect farmland from development, several state programs prohibit residential housing on agricultural lands. Such policies have kept large tracts free of development, and mark Hawai'i as unique and pioneering in protecting farmland. Yet this has had an unintended consequence, as well. Farms that are maintained separate from homes are often quite vulnerable. Farms that exchange, or give, food to nearby neighbors will retain support over the long haul. Most farmers would prefer to live in close proximity to their fields and pastures. Those who live near productive farms (and who can observe questionable behavior) are an essential component in providing

safety, and in responding rapidly to take care of land in moments of crisis. Essentially, the legacy of protecting large tracts of farmland separate from housing is a legacy of the plantation heritage. Now that this is gone, new forms will have to be created. These new forms may learn from, but be distinctive from, traditional Hawaiian home life because the culture that maintained traditional watersheds is also weakened. Building new frameworks will be essential.

6. Water access is also a critical and closely related issue. Court precedents have established that water must be kept within the *ahupua'a* where it was sourced. The quality of some water has been compromised by previous farming practices. Farmers are understandably concerned that “gentlemen farmers” obtain water access and tax breaks for making gestures toward agriculture without feeding local residents. Furthermore, water access is complex and unique to each Island. While we cannot adequately cover these issues here, it does seem essential that the food systems of the future reserve the best agricultural tax breaks and other privileges for those who are actively producing food for Hawai'i residents, perhaps with special emphasis on benefiting those who ensure food gets to lower-income communities.

Community-Based Food Systems as a Public Trust

The State of Hawai'i has put excellent protections in place to safeguard natural resources as a public trust. The state Constitution requires the State to play an active role in protecting all natural resources, including land, water, access to beaches and fishing areas, energy sources, Hawaiians producing food for their own relatives and neighbors, and much more.

Since producing food requires access to land, water, and energy, food systems are intimately connected to public trust resources. Given one original meaning of the Hawaiian word for land — *'āina* is “that which feeds us” — the natural resources used to feed the population of Hawai'i are held in trust for the state's people and should be used to, in the words of the Constitution, “increase agricultural self-sufficiency.” This applies especially to lands owned by the State, yet the State also has trust responsibilities over any land that produces food for Hawai'i residents.

Agricultural self-sufficiency is impossible unless social, commercial, and physical systems are in place to support farmers. For example, it would be difficult for cattlemen to be self-sufficient without having access to meat processing facilities, and it would be impossible for any farmer to build a self-sufficient farm without markets for their produce. Moreover, as the economic history above documents, Hawai'i food systems will not be self-sufficient until they focus on local consumers rather than upon global markets.

Thus it would seem that the State of Hawai'i is required to play a proactive role in fostering and protecting *community-based food systems* as a public trust.

Indeed, the State already holds, and carries out, a deep responsibility to protect traditional forms of agriculture and *ahupua'a* management. These traditional processes are in fact community-based food systems. Thus the State already consciously holds certain community-based food systems in trust.¹² The main difference in declaring *community-based food systems* a public trust (rather than limiting the trust relationship to natural resources) is that specific infrastructure is inherent to any food system. As

¹² “We continue to uphold the exercise of Native Hawaiian and traditional and customary rights as a public trust purpose.” Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 64.)

noted earlier in the report, food systems encompass natural resources, processing, storage, knowledge systems, marketing, and much more. Neither farms nor food production can sustain themselves without these infrastructure elements acting in concert with the needs of farmers and consumers. Natural resources cannot be protected unless this infrastructure operates in concert with the State's responsibilities as public trustee.

This is especially true for the Hawaiian Islands, located at such a great distance from other land masses, where residents are so uniquely dependent on food systems infrastructure.

This is not a call for the State to appropriate privately owned land or facilities. Yet public trust precedents specifically state that exercising public trust responsibilities does not imply — or require — ownership. The state has an inherent responsibility for managing these resources in accord with the public interest. These responsibilities cannot be limited by legislation.

In cases where the State of Hawai'i has invested in a specific infrastructural element — roads, processing plants, databases, or distribution channels, or fostered private investment through tax abatements or other public incentives — its responsibility is quite direct. Yet it holds trustee responsibility even over privately owned land and facilities.

The Hawai'i Supreme Court observed in its 1974 decision *McBryde Sugar Co. v. Robinson*,¹³ that even as the Hawaiian Kingdom granted fee simple title to land owners, that the Kingdom expressly reserved its sovereign prerogatives “[t]o encourage and even to enforce the usufruct of lands for the common good”¹⁴ even for this privately owned land. This precedent was further upheld in the Waiahole water rights case of 2000.¹⁵

Applying this principle to water rights, the Court ruled that “The right to water...is one of the most important usufruct of lands, and it appears clear to us that by the foregoing limitation the right to water was specifically and definitely reserved for the people of Hawaii for their common good in all of the land grants (Appeal from the Commission on Water Resource Management, 2000).”

The Court continued in its 2000 Waiahole Ditch ruling to state that the right to water could not be transferred to a property owner, but continued to be the responsibility of the state. “Thus by the Mahele and subsequent Land Commission Award and issuance of Royal Patent right to water was not intended to be, could not be, and was not transferred to the awardee, and the ownership of water in natural watercourses and rivers remained in the people of Hawaii for their common good.”¹⁶

¹³ *McBryde Sugar Co. v. Robinson*, 54 Haw. 174, 504 P.2d 1330, affirmed on rehearing, 55 Haw. 260, 517 P.2d 26 (1973), appeal dismissed and cert. denied, 417 U.S. 962 (1974).

¹⁴ The Supreme Court referenced this opinion as it ruled on the landmark Waiahole Ditch case in 2000, citing the above case at 184-86, 504 P.2d at 1337-39 (quoting Principles Adopted By The Board of Commissioners To Quiet Land Titles In Their Adjudication Of Claims Presented To Them, 2 Statute Laws of His Majesty Kamehameha III (SLH) 81, 85 (1847), reprinted in 2 Revised Laws of Hawaii (RLH) 2124, 2128 (1925). See citation of this case in Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 44-45). The 2000 decision is available for download at <http://www.hawaiis1000friends.org/public-trust-doctrine.html>

¹⁵ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 44-45).

¹⁶ *McBryde Sugar Co. v. Robinson* (1974), 186-87, 504 P.2d 1338-39.

More succinctly, the Court pointed out that the public trust “doctrine’s basic premise [was] that the state has certain powers and duties which it cannot legislatively abdicate.”¹⁷

Further, the Hawai'i Supreme Court ruled in *Robinson v. Ariyoshi*,¹⁸ that the State’s retained sovereign “prerogatives, powers and duties” concerning water constituted a public trust, and that the state had a special ownership interest separate from ownership held by landowners: “[W]e believe that by [the sovereign reservation], a public trust was imposed upon all the waters of the kingdom. That is, we find the public interest in the waters of the kingdom was understood to necessitate a retention of authority and the imposition of a concomitant duty to maintain the purity and flow of our waters for future generations and to assure that the waters of our land are put to reasonable and beneficial uses. This is not ownership in the corporeal sense where the State may do with the property as it pleases; rather, we comprehend the nature of the State’s ownership as a retention of such authority to assure the continued existence and beneficial application of the resource for the common good.”

Specifically, the Court pointed out that the State’s role goes beyond merely managing projects, or responding to initiatives taken by others. The Water Commission, the Court ruled, holds an “affirmative duty under the public trust and statutory instream use protection scheme to investigate, consider, and protect the public interest.”¹⁹

Upholding the public interest means something different than short-term commercial expediency, the Court ruled. “In short, the object is not maximum consumptive use, but rather the most equitable, reasonable, and beneficial allocation of state water resources, with full recognition that resource protection also constitutes ‘use.’ ”²⁰ It went further to state that the public interest takes precedence over private uses, and that exercise of the public trust implies promoting the benefit of future generations.

The Court also established the principle that prior water allocations could be reconfigured in line with an evolving understanding of the public trust. “Furthermore, we agree with the Commission that existing uses are not automatically ‘grandfathered’ under the constitution and the Code, especially in relation to public trust uses....The public trust authorizes the Commission to reassess previous diversions and allocations, even those made with due regard to their effect on trust purposes.”²¹

It seems clear that these protections for water apply equally to land and other natural resources, given how several provisions of the State Constitution, as amended in 1978, define the State’s public trust:

Article XI: Conservation, Control and Development of Resources

CONSERVATION AND DEVELOPMENT OF RESOURCES

Section 1. For the benefit of present and future generations, the State and its political subdivisions shall

¹⁷ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 49).

¹⁸ *Robinson v. Ariyoshi* (1982), 65 Haw. 641, 658 P.2d 287.

¹⁹ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 143).

²⁰ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 69).

²¹ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 90).

conserve and protect Hawai'i's natural beauty and all natural resources, including land, water, air, minerals and energy sources, and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State. All public natural resources are held in trust by the State for the benefit of the people. [Add Const Con 1978 and election Nov 7, 1978]

AGRICULTURAL LANDS

Section 3. *The State shall conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands. The legislature shall provide standards and criteria to accomplish the foregoing Lands identified by the State as important agricultural lands needed to fulfill the purposes above shall not be reclassified by the State or rezoned by its political subdivisions without meeting the standards and criteria established by the legislature and approved by a two-thirds vote of the body responsible for the reclassification or rezoning action. [Add Const Con 1978 and election Nov 7, 1978]*

PUBLIC LAND BANKING

Section 4. *The State shall have the power to acquire interests in real property to control future growth, development and land use within the State. The exercise of such power is deemed to be for a public use and purpose. [Add Const Con 1978 and election Nov 7, 1978]*

MARINE RESOURCES

Section 6. *The State shall have the power to manage and control the marine, seabed and other resources located within the boundaries of the State, including the archipelagic waters of the State, and reserves to itself all such rights outside state boundaries not specifically limited by federal or international law.*

All fisheries in the sea waters of the State not included in any fish pond, artificial enclosure or state-licensed mariculture operation shall be free to the public, subject to vested rights and the right of the State to regulate the same; provided that mariculture operations shall be established under guidelines enacted by the legislature, which shall protect the public's use and enjoyment of the reefs. The State may condemn such vested rights for public use. [Ren and am Const Con 1978 and election Nov 7, 1978]

WATER RESOURCES

Section 7. *The State has an obligation to protect, control and regulate the use of Hawaii's water resources for the benefit of its people.*

The legislature shall provide for a water resources agency which, as provided by law, shall set overall water conservation, quality and use policies; define beneficial and reasonable uses; protect ground and surface water resources, watersheds and natural stream environments; establish criteria for water use priorities while assuring appurtenant rights and existing correlative and riparian uses and establish procedures for regulating all uses of Hawaii's water resources. [Add Const Con 1978 and election Nov 7, 1978]

Further, the Constitution encourages use of public lands to promote private ownership of farms and homes, as spelled out in Section 10. This is consistent with the legal precedents outlined above:

FARM AND HOME OWNERSHIP

Section 10. *The public lands shall be used for the development of farm and home ownership on as widespread a basis as possible, in accordance with procedures and limitations prescribed by law.*

Thus, while the Constitution promotes fee simple ownership of farmland by smallholders, it also vests powers of trust oversight of that land to the State, the Waiahole decision ruled.

Since the court also ruled that “The maintenance of waters in their natural state constitutes a distinct ‘use’ under the water resources trust,”²² it would seem that similar protections should be afforded to fallow land that was left out of production to enable soil nutrients to replenish themselves. Furthermore, soil microbes, as natural resources, are part of the public trust.

In 1959, when Hawai'i attained statehood, the U.S. government returned 1.8 million acres of land to Hawai'i that had been illegally taken in 1893.²³ In the 1959 Admissions Act these lands were designated as public trust lands. This amounts to 44% of the state's land, although nearly 300,000 acres of this land has been kept by the federal government. These lands are to be used solely for the following purposes:

1. Support of public education
2. Betterment of the conditions of native Hawaiians as defined in the Hawaiian Homes Commission Act of 1920
3. Development of farm and home ownership
4. Public improvements
5. Provision of lands for public use

Yet while land rights appear to be assured by the Constitution, in a different case the Hawai'i Supreme Court ruled that preservation of agricultural lands as envisioned by the Constitution is legally inoperative until the legislature adopts criteria for their preservation.²⁴

The Supreme Court underscored the holistic nature of land and water rights by citing policies that were adopted in earlier times when the worldview was less particularized. “The aforementioned Kuleana Act provision ensured tenants' rights to essential incidents of land beyond their own kuleana, including water, in recognition that “a little bit of land even with allodial title, if they be cut off from all other privileges would be of very little value.”²⁵

Finally, the Court also pointed out that maintaining the public trust requires proactive initiatives. “The constitutional framers and the legislature designed the [Water] Commission as an instrument for judicious planning and regulation, rather than crisis management.”²⁶

²² Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 62).

²³ One source is Goodyear-Kaopua, N.; Hussey, I.; & Kahunawaikaala Wright, E. (2014). *A Nation Rising: Hawaiian Movements for Life, Land, and Sovereignty*. Duke University Press.

²⁴ Rezoning of Agricultural Lands 102 H. 465, 78 P.3d 1, 22: Save Sunset Beach Coalition, *et al v* City and County of Honolulu *et al* (2003). Appeal for the First Circuit Court (CIV. NO. 95-1788-05), October 20.

²⁵ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 63). The decision cites 3B Privy Council Records 713 (1850).

²⁶ Water Use Permit Applications, 94 Hawaii 97; 9 P.3d 409: Appeal from the Commission on Water Resource Management (2000); Case Number CCH-OA95-1, August 22, 180). The decision states in footnote 107: “See, e.g., Stand. Comm. Rep. No. 77, in 1 Proceedings, at 688 ([The public trust] concept implies not only the power to protect the resources but the responsibility to do so long before any crisis develops.); Stand. Comm. Rep. No. 348, in 1987 House Journal, at 1262-63 ([Y]our Committee is of the opinion that the water code should serve as a tool

It is the recommendation of this study that the legislature enact such criteria immediately, including specific language designating community-based food systems as a public trust. Special incentives, and special protections, should be given to food systems that are based on renewable energy sources.

Yet even in the absence of such legislation, state agencies have a responsibility to manage natural resources as a public trust, and could take action to specifically include community-based food systems as part of their trust responsibilities.

This would be essentially to draw from the traditional cultural understandings that underpinned the ahupua'a system. As Land Use Commissioner Scott Derrickson points out,²⁷ these had three essential elements: (a) *Konohiki* who managed resources, (b) *Kapu* laws that governed resource use, and (c) *Pono* a concept that each person take only what is appropriate for their needs.

Since Hawai'i has taken steps to protect remnants of the ahupua'a system, it would be equally important to protect the cultural wisdom, and decision-making processes, that serve as the foundation — not only for the ahupua'a system, but also for future food planning on Hawai'i.

Recommendations

Our overarching recommendation is that **community-based food systems should be considered part of the State's Public Trust, as outlined by the Hawai'i Constitution.** In a state that wishes to regenerate a cultural heritage that revolves around, food, land, and water, and where land, water, energy, and other natural resources are already within the Public Trust, it only makes sense to incorporate community-based food systems as well. Food systems are intimately linked with these Trust resources.

This will be in service to a broader vision: Community-based food systems, as a public trust, will create new cultural and economic connections, and inspire Hawai'i residents to transcend old habits. The food systems of the future cannot be built by following the habits and assumptions that guided the plantation era. Approaches that prioritize rapid return on investment, export-based production, celebration of larger scale businesses at the expense of community cohesion and culture, and create a narrow focus on commerce or agriculture separate from food systems that adequately feed all residents are likely to reinforce the inequalities of the past.

Creating community-based food systems in Hawai'i will be a complex, multiracial, multigenerational, and nonlinear process. It will take decades and will require a concerted effort across sectors if it to be resilient.

This overall vision can be achieved by taking immediate, mid-range, and longer-term actions, outlined below.

and an incentive for planning the wise use of Hawaii's water resources, rather than as a water crisis and shortage management mechanism.')." The same principles should hold true for any exercise of the public trust.

²⁷ PowerPoint presentation, "Water, Culture, and the Public Trust." Available at www.hawaii.edu/wrrc/publication/wrrc_conf_2003_01/wrrc.../Derrickson_talk.pdf

Immediate Next Steps and Priorities

1. The State of Hawai'i must ensure that all eligible Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps) recipients can easily enroll and receive benefits. This may bring as much as \$100 million of income into the state economy annually.

- (a) The Department of Human Services appears poised to make the necessary changes, and these efforts should be expedited.
- (b) Staff resources should be focused on ensuring that all who qualify for benefits are enrolled, with special attention to ensuring that residents of remote areas have equal access to SNAP and other public benefits. DHS should continue to partner with community groups such as Helping Hands, The Food Basket, other food banks, and health centers to reach out to remote areas.
- (c) Serving low-income people, educating them about their rights, and connecting them to resources that help them build capacity to address the complex array of issues they face will be essential components of SNAP outreach and education efforts.
- (d) Application forms must be simplified. A unified application form for all public benefits should be created, with proper technology platforms to integrate information entry and retrieval.
- (e) EBT access must be extended to more farmers' markets. In particular, the City and County of Honolulu should ensure that all 25 of its People's Open Markets obtain immediate digital access to EBT by the summer of 2018.

2. Food system leaders should dedicate concerted resources to building community-based food systems — not simply local food production — while paying particular attention to engaging low-income communities. Private firms, nonprofits, and public agencies alike have helped build community-based food systems. Consistent public support will be needed as long as immense inequalities of income exist.

- (a) Building cohesive statewide networks of food leaders will enable community food systems development to be more strategic, better informed, and more resilient to change.
- (b) Hawai'i's food vision must embrace both small-scale and large-scale food systems initiatives, attuned to the unique powers, challenges, and obstacles that each faces.
- (c) This collaboration must devise an intentional strategy of creating cultural food production enclaves as permanent features of the Hawaiian landscape, and as places where Hawaiian culture is constantly regenerated.
- (d) The plantation economy, housing development, and tourism industries all required public investment or subsidy, so it would be unlikely that a new community-based food system could effectively be constructed and sustained without strategic and consistent public (and private) investment. Specifically, we recommended steps that have been adapted from the successes of the Regional Food Systems Working Group at Iowa State University from 2004-2010, the Center for Regional Food Systems at Michigan State University since 2010; and other similar initiatives:
 - i. DOH, DOA, or other public funds should be dedicated to convening community foods practitioners on a regular basis. We suggest one annual meeting and three quarterly meetings each year.
 - ii. The focus of these meetings should be on implementing practical strategies that build mutual trust and commercial food trade among participants; sessions should emphasize taking practical action steps on an ongoing basis to build community-

- based food networks, as well as to solidify a statewide network of strategic community foods partners.
- iii. A statewide investment fund, such as a Hawai'i Good Food Fund, should be created to encourage private and public investment in community food business, including farms, processors, distributors, and physical infrastructure (for example on-farm cooling sheds or freezers, wash/pack facilities, etc.).
 - iv. Research moneys should also be set aside for small, community-based initiatives so that community practitioners may easily explore emerging opportunities. These may be as small as \$1,000 and should be no larger than \$20,000. The application process should involve a letter of inquiry followed by feedback from the coordinator of the food systems effort before submitting a full proposal to ensure that proposals fit criteria that will be developed by the steering committee, and to ensure that community initiative can be harnessed with minimal time expenditure.
 - v. Public and private funds should be set aside to assist the network to build the capacity of low-income residents to produce food for their own communities and engage in food systems creation.
 - vi. A substantial portion of these funds should be prioritized for Native Hawaiian initiatives.
 - vii. Priority should also be placed on collaborations among community foods practitioners.
 - viii. Common measures of success with regular evaluation should be incorporated into the collaboration process to ensure collective impact. Measuring the extent and strength of community networks, and tracking emergent trends, should be integral to these measures of success.

3. Hawai'i civic leaders should formally determine that community-based food systems are an integral part of the state's Public Trust, and work with partners across the state to realize this goal. The analysis of Public Trust concepts included in this report should be refined in collaboration with professional experts. Legislation may be required to establish a foundation in law (see Mid-Term steps, below).

Mid-Range Action Steps

1. The Hawai'i Department of Health should monitor the economic structures that create poverty, even as they change over time, so that the state always has current information and analysis regarding the causes and impacts of poverty and social determinants of health.
2. Given the declining base of committed volunteers that have run the food relief system in the past, and as long as the economy creates inequalities, food pantries and food banks must create new models for a permanent food relief system. These are likely to require paid staff and consistent operational support. Many of these models will involve food production in low-income community settings, including cultural enclaves. DOH and DOA can play a strong role in funding new models.
3. Based upon the research recommended in Short-term Action 3 above, food system leaders should work with legislators to adopt appropriate legislation that would formalize in state law the concept of community-based food systems as a Public Trust.

Long-Term Action Steps

1. The statewide coordination network should pursue strategic planning for the state, assisting each indigenous food enclave (See Short-term Action 2(c) above), each community-based food production initiative, and each commercial value-added activity to achieve broad public goals. Targets should be established (e.g., how many people need to be fed, how much land will this require, how large an investment will this take, and how will success be measured?) and attained.
2. The State of Hawai'i should allocate consistent funding, and incentivize private investment, for coordination of community-based food activity. New community food system frameworks must be supported through investments in physical infrastructure and knowledge that create local efficiencies. See Appendix E for additional background and examples of infrastructure funding initiatives.



Earth Matters Farm, Hawai'i Island

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Appendix A: Food Bank Partners in Hawai'i

Maui Food Bank partners

Alano Club (Lahaina)
All God's Children Preschool
Aloha Friendship Club
Aloha House - Adult Mental Health
Alu Like, Hoala Hou Hana
Alu Like, Hoala Hou Youth (Moloka'i)
Aunty Jan's House of Blessings (Moloka'i)
Big Brothers Big Sisters
Boys & Girls Club (Central)
Boys & Girls Club (Haiku)
Boys & Girls Club (Kahekili Terrace)
Boys & Girls Club (Lahaina)
Boys & Girls Club (Paukukalo)
Boys & Girls Club (Upcountry)
Calvary Chapel South Maui
Child & Family Service
Child & Family Services (Moloka'i)
Christ the King Food Pantry
Compassion in Action
Early Head Start (Moloka'i)
Faith Family Fellowship
Family Life Center
Friends of Childrens Justice
Good Shepherd Church
Gospel Shoes of Jesus Christ (Moloka'i)
Grace Church
Grace Episcopal Church (Moloka'i)
Hale Ho'omalua Sheleter (Moloka'i)
Hale Hulu Mamo MADCC
Hale Kau Kau – St. Theresa's Church
Hale Mahaolu Sr. Housing
Hana Building Program - Ma Ka Hana Ka 'Ike
Hana Youth Center
Hope Chapel (North Shore)
Hospice Maui
Hui Ohana Council
Ka Hale Ake Ola (Central)
Ka Hale Ake Ola (Lahaina)
Ka Hale Pomaikai (Moloka'i)
Ka Lima O Maui
Kahului 7th Day Adventist Church
Kahului Baptist Church
Kahului Nazarene Church
Kaunakakai Baptist Church (Moloka'i)
Keolahou Church
Kihei Youth Center
Kings Cathedral – Transformations
Kings Chapel (Moloka'i)
La'a Kea Foundation
Lāna'i Union Church
Lāna'i Youth Center
Lanakila Club
Living Pono Project
Living Way Church
MEO – B.E.S.T. Reintegration Program
Malama Family Recovery Center
Marshallese New Beginning Church
Marshallese New Life Church
Maui Adult Day Care Centers
Maui Aids Foundation
Maui Church of Christ
Maui Economic Opportunity (Lāna'i)
Maui Economic Opportunity (Moloka'i)
Maui Family Support Services
Maui Intersection Church
Maui Satsang
Maui Youth & Family Services
Mental Health Kokua
Moloka'i Baptist Church
Moloka'i Occupational Center
Moloka'i Youth Center
Ohana Makamae (Hana)
Parents and Children Together (PACT)
Sacred Hearts Church (Lāna'i)
Salvation Army (Moloka'i)
Salvation Army Hale Palekana
Salvation Army Homeless Outreach
Salvation Army Kahului Family Service
Salvation Army Lahaina Family Service
Special Olympics Maui
St. Damien Catholic Parish (Moloka'i)
St. John's Episcopal Church (Kula)
St. Josephs Church
Tongan Assembly Church of God
United Church of Christ Pohnpei
Waialua Church (Moloka'i)
Wailuku Union Church
Women Helping Women
Women Helping Women (Lāna'i)
Youth With A Mission

Kaua'i Independent Food Bank Partners

As of 2014

Aloha Church
American Red Cross
Boys & Girls Club-Kapaa
Boys & Girls Club-Lihue
Boys & Girls Club-Waimea
Calvary Chapel Lihue
Christ Memorial Episcopal Church
Church of the Pacific
Circles of Light
Crossroads Christian Fellowship
Easter Seals Hawai'i-ARC of Kaua'i Day Health
Faith Christian Fellowship of Kaua'i
Family, Friends & Community
Hale Ho'omalua
Hale Kipa
Hina Mauka
Holy Cross
Hope, Help and Healing Kaua'i
Hui O Na Makuahine Ho'okahi O Kaua'i
Island Worship Center
Ka Hale Pono, Inc.
Kalaheo Missionary Church
Kapaa Missionary Church
Kapaa Seventh Day Adventist
Kaua'i Bible Church
Kaua'i Bible College

Kaua'i Christian Fellowship
Kaua'i Economic Opportunity
Kaua'i Habitat for Humanity
Kaua'i Health Career Training
Kaua'i Hospice
Kaua'i Humane Society
Koloa Missionary Church
Koloa Union Church
Lihue Court Townhomes
Love Kaua'i
Malama Pono
Mental Health Kokua
Nana's House
New Beginning Christian Center
Puuwai Canoe Club
St. Raphael's Church
St. Williams Church
The Children of the Land
The Chow Project
The Salvation Army-Hanapepe
The Salvation Army-Lihue
U Turn for Christ
Waimea United Church of Christ
West Kaua'i United Methodist Church
YMCA
Young Life Capernaum-Kaua'i
YWCA Sex Abuse Treatment Program
YWCA Women's Shelter

Hawai'i Food Bank Partner Agencies on Kaua'i

Aloha Church
Christ Memorial Episcopal Church
Church of the Pacific
Eleele Baptist Church
Hale Ho'omalua
Holy Cross/Sacred Hearts "Love One Another"
Kapaa Missionary Church
Kaua'i Bible Church
Kaua'i Economic Opportunity
Kings Chapel
Koloa Union Church
Lihue Court Townhomes
Nana's House
St. Catherine Parish
St. Michael and All Angels

St. Raphael's Food Pantry
St. Williams Church
The Salvation Army (Hanapepe)
The Salvation Army (Lihue)
Westside Christian Center AOG
Love Kaua'i (Kalaheo Missionary Church)
Boys and Girls Club (Kapa'a)
Chow Project
Hina Mauka
Hui O Na Makuahine Hookahi O Kaua'i
Kapaa Seventh Day Adventist
Lighthouse Outreach
Lihue Missionary Church
U-Turn for Christ
YWCA Kaua'i

Hawai'i Food Bank Member Agencies – O'ahu

Abundant Life United Pentecostal Church
Aiea Seventh-Day Adventist Church
Alternative Structures International
Angel Network Charities, Inc.
Ark of Safety Christian Fellowship
Armed Services YMCA – AMR Outreach
Armed Services YMCA (Schofield)
Beyond The 4 Walls
Bobby Benson Center
Boys and Girls Club – Ewa Beach
Boys and Girls Club – Honolulu
Brethren of Christ International
C4-Christ Centered Community Church
Calvary Assembly of God
Calvary Chapel Pearl Harbor
Cedar Assembly of God
Center of Deliverance Church of God
Central O'ahu Youth Services Association
Central Samoan Assembly of God
Central Union Church
Child & Family Service – Healthy Start Enhanced
Child & Family Service – Healthy Start O'ahu
Chow Project
Church of Christ at Pearl Harbor
Church of God of Prophecy – Kaneohe
Church of the New Testament
City of Joy Assembly of God
City of Refuge Christian Church
Community Clearinghouse
Corvette Center Ministries
Dynamic Compassion in Action
Ewa Beach Baptist Church
Ewa Beach United Methodist Church
Family Promise of Hawai'i
Feeding Hawai'i Together
First Assembly of God
First Assembly of God - Red Hill
First Assembly of God – Windward
First Assembly of God – Central O'ahu
(Wahiawa)
First United Methodist Church
Foslic Foundation of Spiritual Liberty
Fountains of the Living Water
Full Gospel Church of O'ahu
Full Gospel Temple
Good Samaritan Church dba Mataala & Tata
Greater Mount Zion Holiness Church
Gregory House – Save the FoodBasket
Gregory House Program
H-5
Habilitat, Inc.
Hale Kipa Youth Outreach
Hale O Honolulu
Hale Ola Hoopakolea, Inc.
Hawai'i Church For The Deaf
Hawai'i Literacy
Hina Mauka
Honolulu Community Action Program – Central
Honolulu Community Action Program –
Kalihi/Palama
Honolulu Community Action Program – Leeward
Honolulu Community Action Program –
Windward
Honolulu Community Action Program – Youth
Services
Holy Hill of Zion Full Gospel
Honolulu Church of God
Honolulu Fil-Am Seventh-Day Adventist Church
Ho'omau Ke Ola
Hope Chapel Kahuku
House of Faith Christian Ministries
HUGS
Hui Malama O Ke Kai Foundation
Inspire International
Institute for Human Services
Institute for Human Services – Moiliili
Jesus Is Alive Fellowship
Joyful Ministries
Ka Hana O Ke Akua United Church of Christ
Kalihi Union Church
Kalihi-Palama Health Center
Kau Kau Wagon
Kaunakapili Church
KEY Project
King's Cathedral O'ahu
Kokua Kalihi Valley – Elderly Services
Kokua Kalihi Valley – Public Housing
Kokua Kalihi Valley – Youth & Family Services
Ku Aloha Ola Mau
Labor's Community Services Liaison Program
Lanakila Pacific Rehabilitation Center
Life Church
Life Foundation
Light and Salvation Church
Lighthouse Outreach Center Assembly of God
Living the Word
Mountain View Church
Mutual Housing Association
New Hope Christian Fellowship
New Hope Kapolei
New Hope Leeward
New Life Body of Christ Christian Church
North Shore Christian Fellowship

Olivet Baptist Church
Once-A-Month Church
Opportunities and Resources, Inc.
Our Lady of Good Counsel Parish
Our Lady of Kea'au
Our Lady of Mount Carmel Church
Our Lady of Perpetual Help
Our Lady of Sorrows Church
Our Lady of the Mount Church
Pacific Islands Bible Church
Palama Settlement
Paradise Chapel (Social Service)
Parents and Children Together – Early Head Start
PACT– Economic Development Centers
PACT– Family Peace Center
PACT – Hana Like – W. Honolulu
PACT– Kaneohe Community Family Center
PACT – KPT Family Center
PACT – KPT Youth Program
PACT – Ohia Shelter
Parish of St. Clement
Partners in Development Foundation
Partners in Development – Na Pono
Peniel Pearl Gates Church
Po'ailani
Po'ailani – Pahia
Private Sector – Hawai'i
Rainbow School
Rebuilders Addictions Ministries
Responsive Caregivers – Aiea I
Responsive Caregivers – Kapalama
River of Life Mission
Rock Church
Ronald McDonald House Charities
Sacred Heart Church – Waianae
Salvation Army – A.R.C.
Salvation Army – ATS
Salvation Army – Camp Homelani
Salvation Army – Family Services
Salvation Army – Family Treatment
Salvation Army – Kauluwela
Shelter of Wisdom
Shriners Hospitals for Children Honolulu
South Shore Christian Fellowship
Spirit Filled Christian Fellowship
St. Ann's Project Share
St. Anthony's Outreach
St. Elizabeth Catholic Church
St. Elizabeth's Episcopal Church
St. George Catholic Church
St. John the Baptist Catholic Church
St. Jude Catholic Church
St. Mark Lutheran Church
St. Matthew's Episcopal Church
St. Michael's Outreach
St. Pius X Church
St. Stephen's Episcopal Church
St. Timothy's Episcopal Church
Sts. Peter and Paul Church
Su Gran Alabanza
Surfing the Nations
Susannah Wesley Community Center
Sutter Health Pacific – Kahi Mohala Behavioral Health
Trinity Church Central O'ahu
Trinity Missionary Baptist Church
United States Veterans Initiative
Wahiawa Seventh – Day Adventist Church
Waianae Baptist Church
Waianae Coast Christian Women
Waianae Coast Comprehensive Health Center
Waikiki Community Center
Waikiki Health Center – Care-A-Van
Waikiki Health Center – Next Step Shelter
Waikiki Health Center – Youth Outreach
Waimanalo Seventh-Day Adventist Church
Waipahu Community Christian Church
Waipahu Hongwanji Mission – Adult Day Care
Waipahu Seventh – Day Adventist Church
Waipahu United Church of Christ
Windward Baptist Church
Windward United Church of Christ

The Food Basket Partners (Hawai'i Island)

Annunciation Catholic Church
Big Island Substance Abuse Council
Boys & Girls Club-The Big Is
Bridge House
Central Christian Church
Central Kona Union Church
Child & Family Services
Christian Liberty School
Christ Lutheran Church
Christ Lutheran
Family Support Services of West Hawai'i
Food Basket Hawai'i Island Food Bank
Glad Tidings Church
Goodwill Industries
Grace Baptist Church
Hale Kipa
Hale Kipa
Hale Ohana
Hawai'i Island Adult Care Inc: Senior Helpers
Hawai'i County Economic Opportunity Council
— OEO: Puueo Office Classroom
Hawai'i Island HIV Aids Foundation
Hawai'i Island HIV/Aids Foundation
Hawai'i Island HIV/Aids Foundation
Hilo Hongwanji Mission
House of Wings Ministry
Immaculate Heart of Mary Church
Kawaihae Transitional Shelter
Kihei Pua Emergency Shelter
Kona Adult Day Center
Kona Baptist Church
Kona Gospel Chapel Pentecostal
Kona Hongwanji Preschool
Lighthouse Ministries
Living Waters Assembly of God
Lokahi Treatment Center
Mental Health Kokua
Mental Health Kokua: 8-16 HR Group Home
Mokuaikaia Church
New Hope Christian Fellowship
New Hope Christian Fellowship Puna
New Hope Christian Fellowship Waimea
New Hope Christian Fellowship Waimea
Ocean View Food Pantry/Meet & Eat
Office of Social Ministry
Olaa Community Center
The Patch
Patch Training
Parents Inc
Paradise Park Church of the Nazarene
Puna Baptist Church
Sacred Heart Church
Sacred Heart Church
Salvation Army the: Corps Community Centers
Salvation Army the: Outpost Honoka'a
Solid Rock Ministries
St. Anthony's
St. Benedict's Church
St. Joseph Catholic Church
St. Michael's Catholic Church
St. Theresa Catholic Church
Teen Challenge
Turning Point For Families
Under His Wings Ministry
University of the Nations
Victory Outreach
Young Life Hawai'i Island
YMCA
YWCA-Hawai'i Island

Appendix B: Brief History of US Food Banking and Food Relief

The public role in managing the poor and hungry has early origins in religious texts and governments. Early public policies in the American Colonies and then the United States perpetuated a version of the early English “Poor Law,” which designated the poor and the hungry as responsibilities of their immediate family and then their immediate communities if there was no family. Because Colonial American productivity was relatively low, any able-bodied person was expected to work, and social pressures were placed on individuals to conform. Many would say this culture persists to this day, yet for many familial and community ties, and thus responsibilities, have eroded. In the early 1900s, corporate leaders were expected to take responsibility for poorer members of their community. The Federal government did not play a role in hunger relief until the Great Depression in the 1930s.

Farm commodity prices plummeted during the 1920s, and became very volatile following the stock market crash of 1929. Ironically, low farmgate prices meant farmers produced a glut of commodities in an effort to earn income, at the same time that hunger increased because consumers had little money to buy food. This situation gave rise to the first versions of what is now an essential piece of legislation — the Farm Bill. The original federal food welfare program involved offering “food stamps” to the hungry and unemployed: coupons allowing them to purchase surplus food items. Under this program, people who were certified by a relief organization (thus designated as “needy”) were able to purchase some foods at a subsidized price. The Secretary of Agriculture was responsible for designating which foods qualified for surplus pricing. This program continued until World War II, when strict rationing programs for all American consumers were instituted.

After World War II, farmers took advantage of new technologies to grow a wealth of crops. Despite this increased productivity, prices rose to unprecedented high levels, in large part because US loans to Europe under the Marshall Plan kept demand high by allowing war-torn nations to purchase American farm products. Yet while farmers prospered, many urban dwellers were still struggling to rebuild their lives after the war. USDA set up a commodity distribution program, and covered food shipping costs.

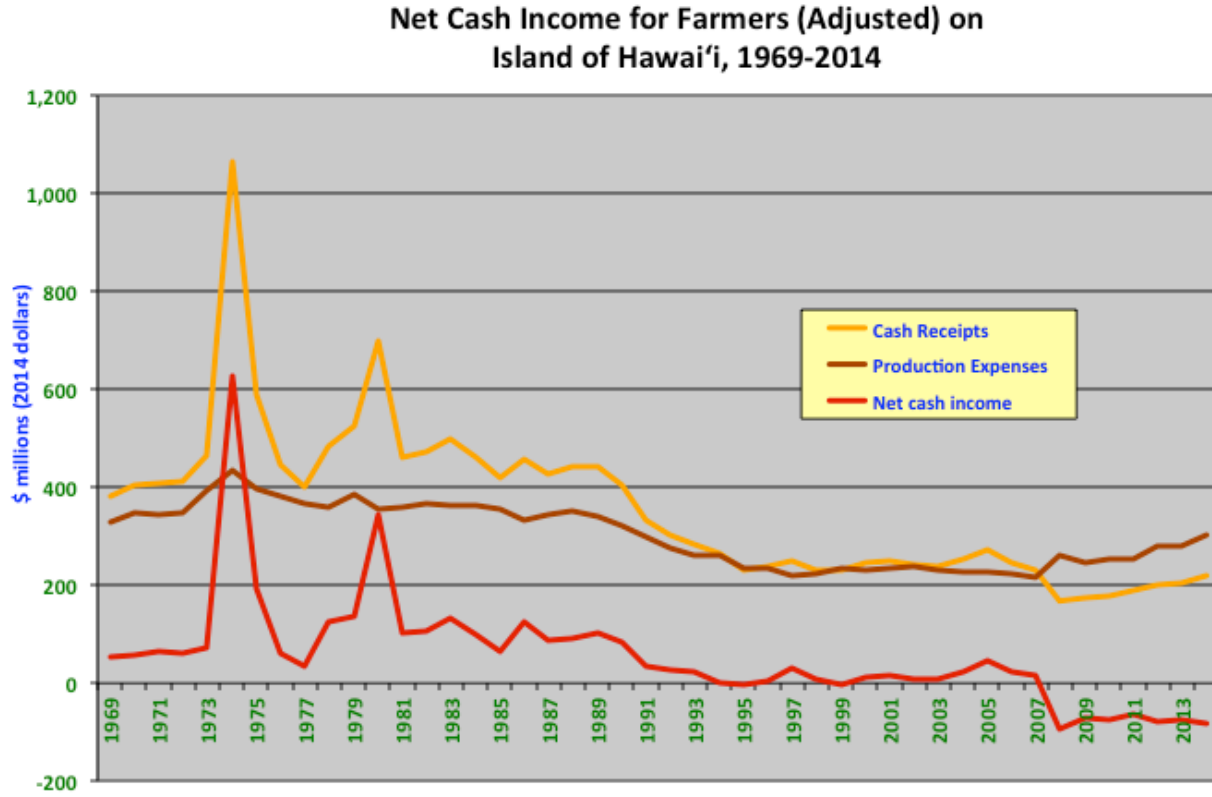
Children’s nutritional requirements and federal policy first intersected in 1946 when President Harry Truman passed the National School Lunch Act in order to “safeguard the health and well-being of the Nation’s children and to encourage the domestic consumption of nutritious agricultural commodities and other food.” During this post-World War II era, in which the United States was emerging from a period of scarcity and food rationing, the policy makers were concerned that chronically undernourished children made poor soldiers and workers. The original act provided schools a nine-cent reimbursement per meal in the form of grant aid, as well as the provision of commodities for free or below market prices.

In the 1960s hunger is thought to have been “rediscovered” as an issue. Not that it had ceased to exist, but that it fell back into favor as a political talking point. Thus the second food stamp program was introduced as both a campaign promise to serve poor city populations and as a mechanism to support falling farm prices. Food banks were formed out of a recognition that hunger was growing in scope, and adults required food distribution mechanisms as well as students did. Yet these food banks depended upon “surplus” food donations from food manufacturers. Legislators understood that these relief programs would not provide an adequate diet to the hungry, but also recognized that it was less expensive than opting for more comprehensive relief.

Following civic activism in the 1970s the purchase requirement of the food-stamp program was discontinued and participation numbers surged. The Food Stamp Act of 1977 gave rise to the Supplemental Nutrition Assistance Program (SNAP) that most people are familiar with today. Even though families relying on food assistance dollars are no longer limited to purchasing foods designated as surplus items, the United States' primary policies for handling and managing hunger still have their roots in supporting agriculture and are subject to the influences of large agribusiness lobbies. They are not, at core, poverty alleviation programs. Early in the development of these programs, bread lines were considered an outlet for farm surpluses. It has been said, "Food banks are not the answer, they're the band aid, a place where corporations dump their food."

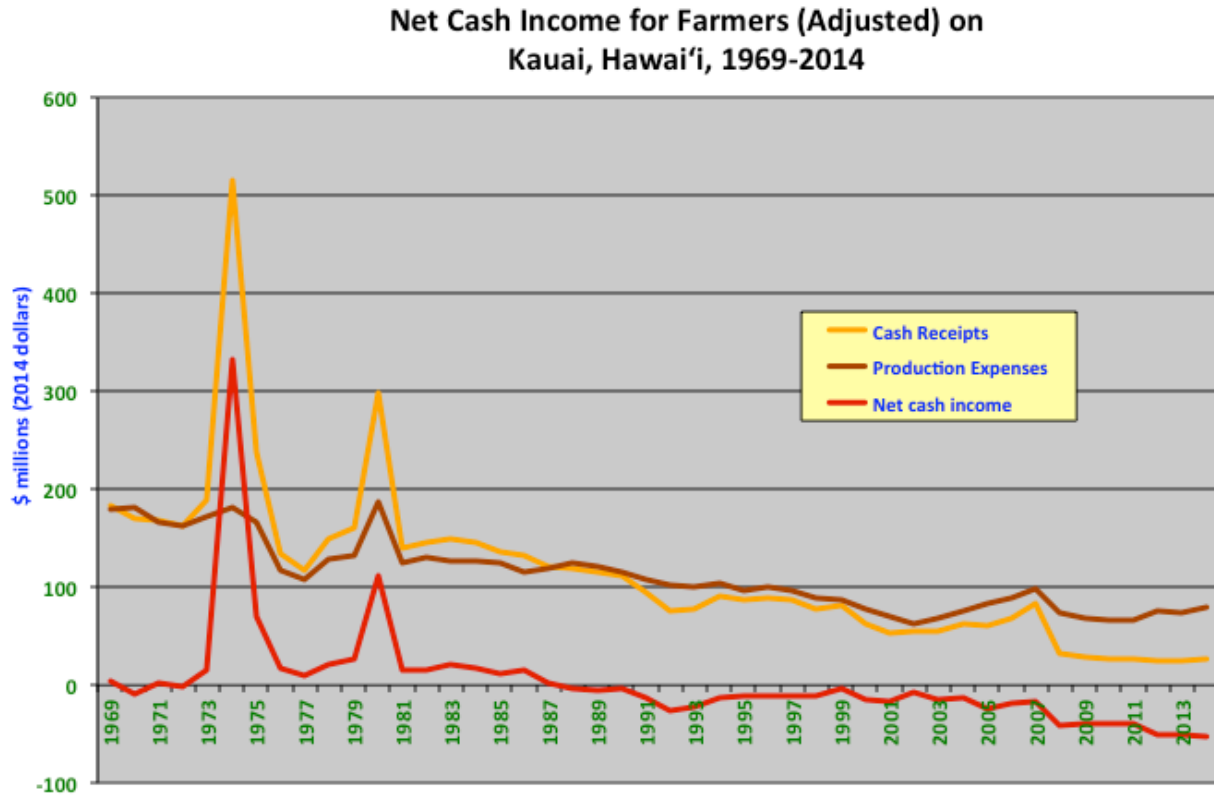
Appendix C: Farm Income by County

Hawai'i Island



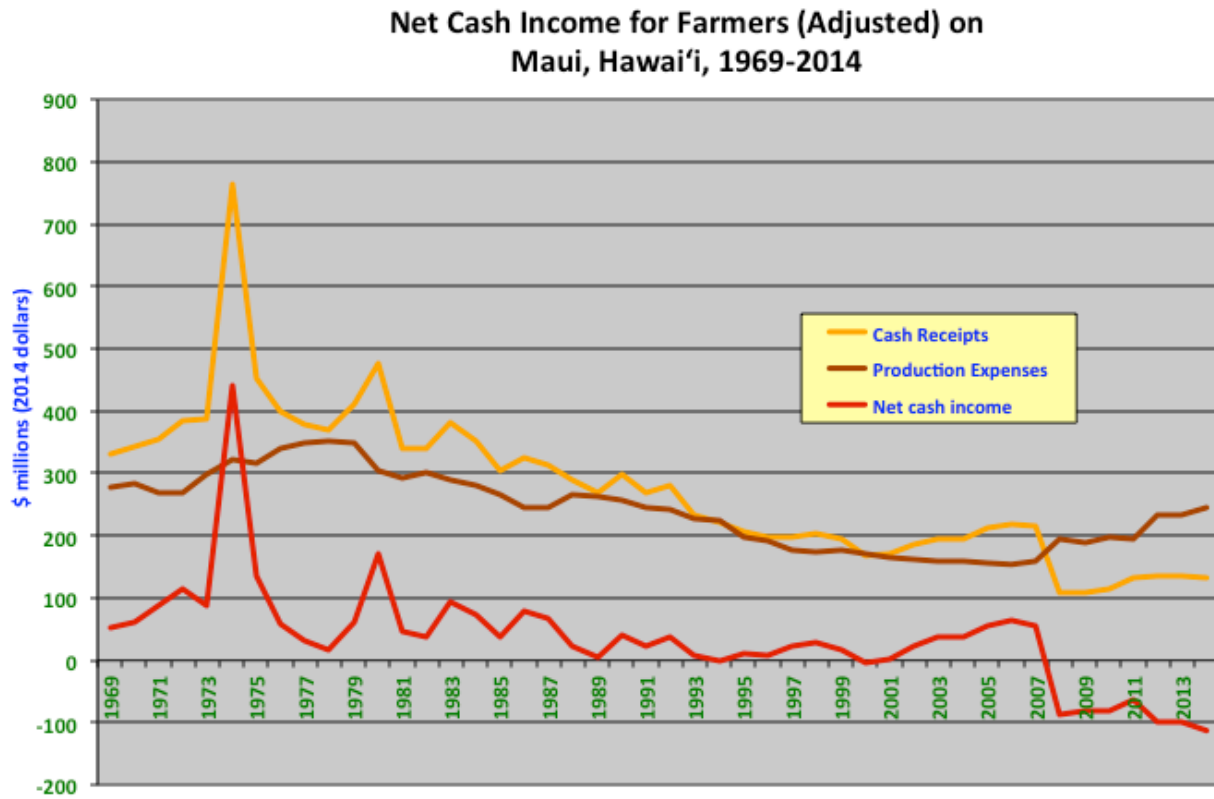
Source: Bureau of Economic Analysis

Kaua'i



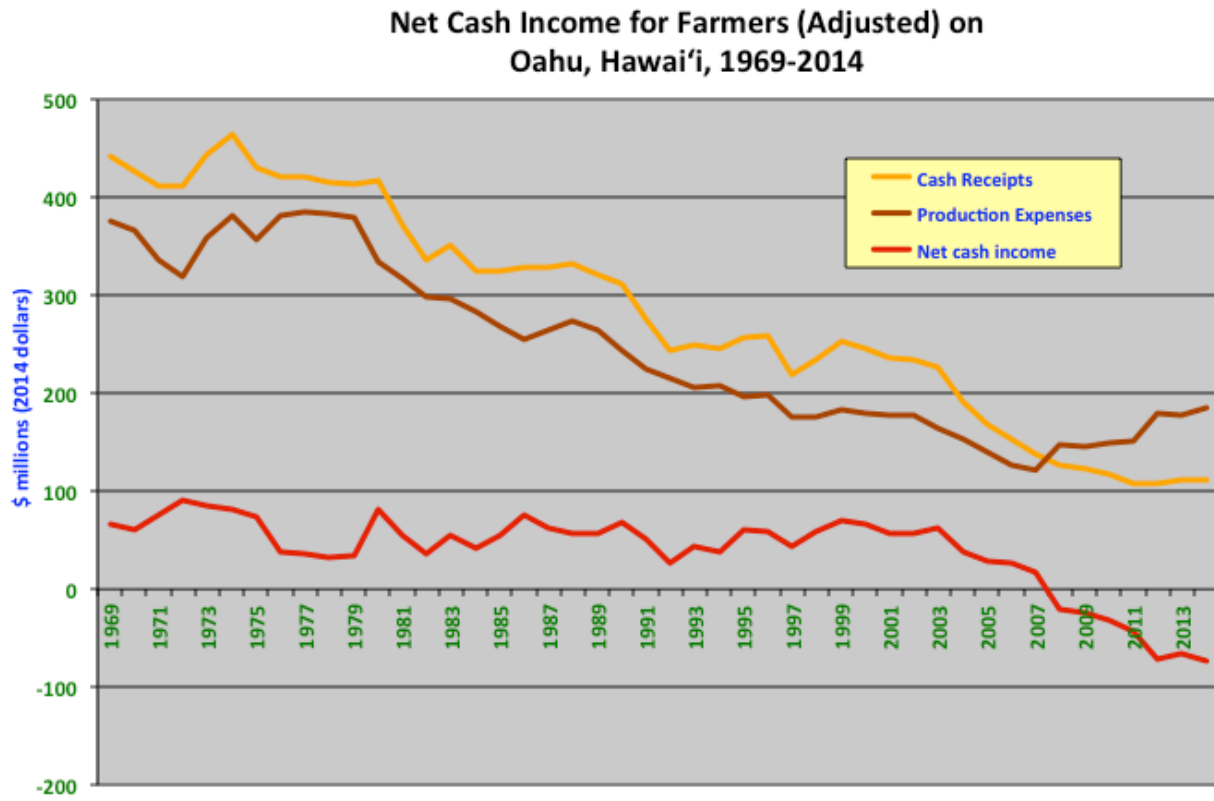
Source: Bureau of Economic Analysis

Maui County



Source: Bureau of Economic Analysis

O'ahu



Source: Bureau of Economic Analysis

Appendix D: Direct Sales and Net Farm Losses by Island

Source: Census of Agriculture 2012

Table 8: Direct Sales for Farms in Hawai'i By Island

	Total Farms	Number Farms Selling Direct	Direct Sales \$mlns	Direct Sales Percent of Total Sales	Pct Increase Farms Since 2007	Pct Increase Sales Since 2007
Hawai'i Island	4,282	788	6.0	2.4%	43%	86%
Honolulu Co.	999	262	3.2	2.0%	26%	75%
Kaua'i	591	204	1.3	2.0%	21%	10%
Maui	1,128	352	2.7	1.4%	30%	32%
State	7,000	1,606	13.2	2.0%	41%	53%

Table 9: Net Losses for Farms in Hawai'i By Island

	Total Farms	Farms with Net Gains	Farms with Net Loss	Percent with Net Loss
Hawai'i Island	4,282	2,018	2,184	51%
Honolulu Co.	999	538	461	46%
Kaua'i	591	253	338	57%
Maui	1,128	524	604	54%
State	7,000	3,415	3,587	51%

Appendix E: Infrastructure Fund Models and Recommendations

Specialty crop producers often identify “lack of capital” as the primary barrier to farming and expanding farm operations during supply analysis studies. This is captured in the findings of a national survey conducted by the National Young Farmers’ Coalition (Lusher Shute, 2011) and others.

Yet studies conducted by Crossroads Resource Center and New Growth Associates also find that farmers are reluctant to take on new debt. In many cases this is because farmers perceive that the risks they face -- from unpredictable weather, to fluctuating markets, and rapidly changing markets-- are often not recognized by financial institutions that are accustomed to a predictable cash flow. Particularly in the case of new and beginning farmers, a grants program for on-farm, capital investments is more appropriate. One interviewed, established South Carolina rancher named access to start-up capital as a primary barrier to growing the food system, and proclaimed a desire for a state funded grants program for new farmers, even though she would not benefit from such a thing.

Indeed, many food projects also pose barriers to lenders, since they offer low returns, are high risk, and are often put forward by firms that lack liquidity. Yet this is primarily to say that these pioneering farms and food businesses lack supportive infrastructure that embraces (and reduces and shares) the inherent risk of launching new businesses in emerging markets, including financial lenders.

Moreover, the banking system itself is also unsure of how to place itself in relation to farm or food-business debt. As one large grower put it, “Agriculture does not fit into any lender’s equation.” Many lenders simply have no clear way of evaluating potential loans, because finance mechanisms are not engineered to consider food investments (though commodities based agricultural production is quite a different matter). Many banks are owned by holding companies, or a corporate group that does not allow local bank officials to deviate from established policy. The demands of the secondary market require standardization of loans (and risk calculations) in ways that often preclude innovative investment.

Even traditional agriculture banks, providers of operating loans to large commodity producers, may struggle with evaluating a diversified, specialty crop operation or an innovative business plan (Peters Moschetti & Phillips, 2012). Several growers reported in interviews, for example, that it is difficult to obtain bank loans since they are both farmer and processor; banking templates assume a business is specialized to provide one service or the other. “When I am considered a manufacturer, I am given no credit for the inventory I have [in the fields],” one lamented. “Because I don’t fit into the box, I am considered high risk.” Furthermore, traditional agricultural lenders have expressed confusion about the eligibility of a producer desiring to borrow for manufacturing or processing equipment.

Farmers also report difficulty since they have shied away from taking on debt, and thus have little track record to show a lender, and little liquid capital since most of what they have is tied up in their operation.

During a broad examination of food-systems funding conducted by RSF Social Finance, several gaps were identified in various sectors. Notably, while most grant funding is directed at non-profits providing support services to food and farm entrepreneurs, it is the entrepreneurs who assume the financial risk. Some producers may obtain patient loans if they have social connections that allow them to reach out to people of means (internet platforms such as Kickstarter have played an important role), but the farmer may still lack resources for purchasing land, obtaining technical assistance, or for contingencies.

In the processing, aggregation, and distributor sector, grant funding may support market creation and promotion, Farm-to-Institution programming, planning for value-added food businesses, and internet platforms, but only those with ample capital of their own are able to assume the risk of launching a new business. Processing facilities for two very distinct enterprises -- meat slaughtering and processing, or fruit and vegetable processing and storage, are typically quite expensive. They are desperately needed in order to build local food trade, but face the same limited financing options. Where financing for retail channels exists, it exists for non-profits addressing low access in low-income areas. The RSF report calls for additional private investment in this sector, with an emphasis on educating investors regarding the community benefits of such an investment, so they will not expect the profit margins other investors aim to obtain (Foley, Goodman, & McElroy, 2012).

Cooperatives often make a determined effort to bridge these gaps by pooling member capital; yet the idea of cooperation is better received in some communities more than others. Moreover, in a fast-paced society it can be difficult for co-op members to settle into the patient discussions required to form solid, respectful co-ops. Some co-ops that have been formed operate in name only, with one person holding the reins and little buy-in from other members. Despite these difficulties, however, co-ops are often the most rapid way to pool capital. They are an especially attractive structure when the prevailing economy is floundering; indeed co-ops have emerged in waves during economic downturns, and may be less attractive when investors perceive that the mainstream economy can reward them well.

Moreover, given the intricacies of the food system and its various sectors, access to capital is not the only issue plaguing farmers. Many require technical assistance to use their capital effectively; such help may facilitate project financing, or provide guidance as businesses expand. Where funding mechanisms either require the formation of a business development team as part of the application process or can provide access to a team, funding goals are more likely to be fulfilled (St. Onge, Sawyer, Kahler, & Perkins, 2011; Peters Moschetti & Phillips, 2012; Cortese, 2011). Furthermore, a manager of a state-sponsored, on-farm infrastructure fund reports that the business planning class requirements for her program are essential to the producers' success and that most producers express deep appreciation for the requirement. During the program exit interviews, the producers report that the business planning class was more valuable than the cash itself. She went on to recommend that no public monies should be given away without a business planning class requirement or at least a financial technical assistance team made available (Hayes, 2013).

In order to bridge the gap between food-systems enterprises and financial capital, special funds have been developed across the country. Since each was developed to address unique investment issues in their own regions, they differ quite a bit from each other.

The following summaries highlight state-sponsored funding mechanisms that target specialty-crop production, aggregation, or retail sale. Yet it should not be overlooked that investment circles have emerged at the household, community, or sub-state level as well.

Models from Across the Country

Tobacco Trust Fund Commission, North Carolina

<http://www.tobaccotrustfund.org>

Over the course of the 20th Century, tobacco usage sharply declined in the United States in response to better medical information and changing public opinion. One outcome of this shift was a set of lawsuits brought by states against tobacco companies for health care costs associated with tobacco use. The result of these lawsuits was the 1998 Tobacco Master Settlement Agreement, which established a twenty-five-year, \$206 billion plan for cigarette manufacturers to reimburse states for tobacco-related health-care costs. The companies also agreed to restrictions on advertising and marketing their products. To offset the resulting sales losses, the companies agreed to pay an additional \$5.15 billion to tobacco farmers, quota holders, and tobacco-growing states. The Tobacco Transition Payment Program, also known as the buy-out, established ten years of payments to ease the transition to a system less dependent on tobacco.

The 46 states that received settlement money chose to invest it in a myriad of ways. Much of the money was used for anti-tobacco campaigns, but some states also used it for other public projects. The National Governors Association released a report outlining each state's plan for their settlement funds (National Governors Association 2000). North Carolina's investments were the following:

- Establish a non-profit corporation to assist farming communities and two trust funds (listed below)
- 50% of settlement payments to a nonprofit corporation for economic-impact assistance to tobacco-dependent regions of the state
- 25% to a trust fund to be established by the General Assembly for tobacco producers, allotment holders, and persons engaged in tobacco-related businesses
- 25 % to a trust fund to be established by the General Assembly for health-related interests (NGA 2000, 41).

The economic impact assistance proportion of the fund was to be used for educational assistance, job training and research. The nonprofit corporation, the North Carolina Tobacco Trust Fund Commission (TTFC) assists tobacco farmers, tobacco quota holders, individuals displaced from tobacco-related employment, and persons engaged in tobacco-related businesses (North Carolina Tobacco Trust Fund Commission, 2007, 11).

Between 2001 and 2006, the Commission invested a total of \$53.8 million in 33 development programs, including the creation of multiple agricultural enterprises, the conservation of ecological resources, and the founding of several farmers' markets. The Commission estimates that nearly 600 jobs were created directly from these programs, and that almost 12,000 workers received job related training.

The North Carolina Tobacco Trust Fund created a funding mechanism that has funded rural development initiatives in that state for over 16 years. Funds have been administered by RAFI-USA in Pittsboro. Starting with local funding, RAFI-moved to a statewide effort when the North Carolina legislature mandated that funds must be available to every county. Funding is allocated year-by-year.

At times, the competitive grant program has had as much as \$2 million to give out in a single year. That amount had diminished to \$225,000 by 2012, as the program phases out (Schroeder, July 11, 2013). Farms, food businesses, and community projects are all eligible.

In 2011, Andrew Brod, senior researcher at University of North Carolina – Greensboro, compiled an economic evaluation of RAFI's statewide funding program, which began in 2008. He found that the Tobacco Communities Reinvestment Fund had offered 367 grants totaling \$3.6 million over the three years 2009-2011 (Brod, 2011). Seven of every eight grants were allocated to individuals. RAFI estimates that 1,300 jobs (including farm ownership jobs) were directly created by the grants (Brod, 6), and claims another 2,800 jobs were created indirectly. Most grants were given in the western part of the state (Bereitschaft, p. 4).

Joseph Schroeder, who managed the grant program for RAFI for several years, said that the key to the success of the fund, from his perspective, was that RAFI established a very solid review process from the beginning. This allowed the fund to develop a very unique approach, allowing grants to be allocated directly to individual farms and business owners. Schroeder added that "there is a tension that exists where public moneys are given to individuals," but this is addressed in multiple ways. First, any project funded must be relevant to the community near the grantee. Each recipient is also required, as a condition of the grant, to teach others what they have done. Further, grants are small, with a limit of \$10,000 that can be awarded to any one person or business, and a total of \$30,000 to a community collaboration. Typically, TCRF does not offer grants for trucks or equipment.

"What makes the program successful is that we are rewarding farmers who already know what they want to do – those who invest everything they have into the farm," Schroeder said. Each farm applicant must already be earning more than half of their personal income from farming. Nor will the fund give money to any project that relies on grant funds for administration. Yet this is not just a matter of financial investment, it is also a case of rewarding farmers who are passionate about an idea. Although no cost share is required from the farmer, "the average farmer doubles the investment we give them."

Schroeder says the fund places a strong emphasis on collaborations. As manager of the fund, he did considerable work to help individuals and collaboratives prepare applications, but was not involved in funding decisions. "We spend a lot of energy with the farmer on the front end," he added. "Each applicant has to show a path to sustainability."

Golden Leaf Foundation, North Carolina

<http://www.goldenleaf.org>

Similar to TTFC, the Golden Leaf Foundation was created by the state legislature with MSA funds and with the goal of strengthening the state's economy through diverse, open-form grants making in several priority areas, including agriculture. Currently Golden Leaf has received \$1 billion in MSA funds and has funded 1,133 grants, totaling more than \$498 million.

Pennsylvania Fresh Food Financing Initiative, Pennsylvania

http://www.trfund.com/financing/Healthy_food/FreshFoodFinancing.html

The State of Pennsylvania, in partnership with The Reinvestment Fund, The Food Trust, and the city's Urban Affairs Coalition, created a financing initiative that provides loans and grants to grocery store development in underserved areas. Seeded by a \$30 million grant from the State of Pennsylvania, an additional \$145 million was invested through the broader partnership. All funds were deployed over six years. During that time, 206 applications were received, and 88 projects were financed including \$73.2 million in loans and \$12.1 million in grants. Approved projects were expected to create 5,023 jobs and open 1.67 million square feet of commercial retail space. Our team was unable to verify whether these results had been confirmed.

Farm Viability Enhancement Program and Matching Enterprise Grants for Agriculture Program, Massachusetts

<http://www.mass.gov/eea/agencies/agr/about/divisions/fvep.html>

<http://www.mass.gov/eea/agencies/agr/about/divisions/mega.html>

In response to the collapsing dairy industry in New England, Massachusetts started the Farm Viability Enhancement Program. Originally, this program provided farmers with a lump sum of money in exchange for a temporary agriculture land conservation easement. This granted money was intended to provide the farmers with the financial opportunity to re-tool and diversify their operations. In its current form, interested farmers apply for the program and upon selection, go through a business planning process. During this business planning process, a team of experts assesses the farm's financial records, management practices, equipment, buildings, and natural resources, and then makes recommendations with the goal of increasing the farm's viability. If the farmer is willing to prioritize the recommendations, then he or she places a set amount of land under a five or ten year agriculture conservation easement. A grant is awarded to the farmer as a function of the amount of land and length of contract. Since the program's inception in 1996, 452 farms have been placed under a conservation easement, totaling 37,134 acres. The program invests an average of \$441 per acre and leverages an additional \$323 per acre.

In order to address the particularly unique needs of beginning farmers, the Massachusetts Department of Agriculture created the Matching Enterprise Grants for Agriculture Program (MEGA). This program was born out of the same thinking around the Farm Viability Enhancement Program, however, it does not require a land easement or that the farmer even owns his or her land. This program provides up to \$10,000 in one-to-one matching cash for fixed capital improvements or equipment purchases by new farmers. The program offers technical assistance and requires business planning class attendance, with a preference for farmers with the ability to scale up or build a commercially viable business. Farmers must have between one and five years of commercial experience and must be able to demonstrate long term, secure access to land. Approximately 10-12 grants are given each year. To date, the program has granted \$250,000 and has estimated a total of \$650,000 has been leveraged in the three years that it has been in effect.

Flexible Capital Fund, Vermont

<http://www.vsjf.org/what-we-do/flexible-capital-fund/about-flexible-capital>

Recognizing that Vermont companies tend to be smaller and more rural than typical candidates for equity financing, the Farm-to-Plate Investment Fund was formed through several public and private partnerships. Also known as the "flex fund," this program provides flexible risk capital and technical assistance to entrepreneurs addressing gaps in the sustainable agriculture supply chain. This organization, the Vermont Sustainable Jobs Fund, also occasionally awards grants.

Michigan Good Food Fund (MGFF)

<http://migoodfoodfund.org/>

A \$30 million public-private partnership loan and grant fund created to finance healthy food production, distribution, processing, and retail projects that benefit underserved communities throughout Michigan. This fund provides a variety of financing options for loans and a complimentary grant program that are available for those who receive a loan through the program. The MGFF looks to increase access to healthy food as a means to improve the health of all Michigan residents and drive economic development and job creation to grow Michigan's economy, by: ensuring equitable access to food, jobs, ownership, and flexible investment capital. Promoting environmental stewardship and encourage sustainable environmental practices. As well as local sourcing, through increasing the sourcing and

supply of locally grown and regionally produced foods. The four primary partners include W.K. Kellogg Foundation, Michigan State University Center for Regional Food Systems, Fair Food Network, and Capital Impact Partners. MGFF also provides business assistance through courses, and direct consultant services through MSU CRFS and the Fair Food Network partners.

Fair Food Network Initiatives:

<http://www.fairfoodnetwork.org/>

Double up Food Bucks program makes it easier for low-income Americans to eat more fresh fruits and vegetables while supporting family farmers and growing local economies by providing Supplemental Nutrition Assistance Program (SNAP) beneficiaries with a one-to-one match to purchase healthy, locally grown fruits and vegetables. Funded through a \$5.1 million grant from the USDA's new Food Insecurity Nutrition Incentive (FINI) grants program matched with private funds for a total of \$10.4 million. The program, which originated in Michigan, is currently being expanded/replicated nationwide.

Northeast Fair Food Fund a loan program with a variety of financing options for mid size farmers to grow their business. To date FFN has raised over \$5 million for the program. Their website provides a list of current businesses that have received financial and business assistance through the loan program, consulting corps, and business boot camps.

Recommendations for Fund Development

Crossroads Resource Center recommends the development of both loan and grant opportunities that work in complementary ways.

Our overall framework is based on creating a competitive grant program, using state funds, that will strengthen the formation of clusters of farms, with supportive infrastructure, that will locate washing, packing, storage, and distribution capacity in close proximity to farms, helping them sell to both very local and broader markets. This program should be housed in a suitable organization or agency, which will convene a statewide panel of reviewers knowledgeable in food systems work from diverse perspectives. Proposals should be judged on the following several criteria:

- Documented engagement of local residents and other stakeholders;
- Evidence of clear partnerships among farmers and multiple players in the local food system, operating out of considerable mutual respect and flexibility to local conditions;
- The relevance and clarity of proposed activities to the state's goal
- The ability of each applicant to carry out the proposed activities; and
- The ability to leverage private investment, at least in the future.

In addition, both loans and grants may be appropriate to help individual farmers purchase suitable equipment and infrastructure for their farms. As in North Carolina and Massachusetts, any grants to individuals should be limited to \$10,000 or less, and should require some matching investment from the recipient in terms of sweat equity or capital investment; this might be a 10% or 20% match, but certainly should be less than a 50% match. North Carolina's experience suggests that such grants may best be allocated to those who exhibit a clear personal commitment, and strong passion for the work involved. Once again, one or more review committees that represent diverse stakeholders in the state food system should be convened to consider grant and loan applications. Grants may be considered separately from loans, or in combination, as these committees decide is appropriate.

Where existing funding mechanisms are already in place, additional funds should be allocated by the state for specialty crop agriculture investments.

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Appendix F: Invasive Species Affecting Agriculture

Coffee Borer Beetle

First noticed in 2010 on Hawai'i Island, the Coffee Borer Beetle (CBB) has been destroying otherwise award winning coffee crops since then. The resulting decrease in supply and quality has driven up prices on an already expensive, specialty coffee product- Kona Coffee. Currently the CBB is found in the Kona and Ka'u regions on Hawai'i Island and O'ahu. It has been noted in other parts of the world that the CBB can reduce yields by up to 90%, though on average a farmer will lose about 20% of the crop (University of Hawaii at Manoa, 2011).

Coffee Borer Beetle spends most of its life cycle inside coffee berries, entering through the scar on the blossom end of the berry. Females bore into immature and mature coffee berries, while they're attached to the tree, and lay their eggs. The larvae eat the berry and the bean. Because it lives primarily within the berry, the beetle is difficult to control through conventional insecticides (Matsunaga, 2014).

To combat the CBB, there is a HDOA pesticide subsidy program that covers some of cost of insect-pathogenic fungus, *Beauveria bassiana* (State of Hawaii Department of Agriculture, 2016). Reportedly, the judicious use of this fungus has reduced crop losses from 50% to 10%, and the HDOA program has reduced the cost of this treatment from \$200/gallon, to \$50/gallon (Western SARE, 2015).

HDOA has established permanent rules regarding the inter-island transport of green coffee beans (unroasted), coffee plants and plant parts, used coffee bags and coffee harvesting equipment. Diligent harvesting and removal of all berries including out of season, under developed, dried, etc. and the proper disposal of berries through burning or burying, prior to pruning has been identified as a way to control and limit the spread of the CBB (Matsunaga, 2014). The University of Hawai'i is pursuing IPM strategies (nematodes have been shown to reduce the fertility of female CBB) and traps, with mixed success. Every coffee growing region in the world has to manage CBB, typically through extensive hand labor, described above.

Though coffee growers know CBB the world over, it is native to Africa. It was reported in Brazil in the early 1900s, in Central American in the 1970s, Dominican Republic in 1980s, Puerto Rico in 2007, and Hawai'i in 2010. CBB is likely unknowingly transported on immature berries.

Little Fire Ants (or Red Ants)

Since their discovery on Hawai'i Island in 1999, the Little Fire Ant (LFA) has been found in the following places: Kalihiwai area of Kaua'i; O'ahu; Maui in Waihe'e, Nahiku, Huelo, and Hana; on Hawai'i Island infestations are widespread throughout the windward side and smaller infestations have been found in the Kona-Kailua area (Hawaii Invasive Species Council, 2016).

The most likely cause of infestation was transportation of potted plants from Florida in the 1990s. LFAs can be hard to detect because they can nest in many places and do not create mounds as many other ant species do. Currently there are limited actions being taken by the state in regards to LFAs, with the majority of their work taking place in identifying the spread of LFAs and educating farmers and city dwellers alike on how to identify, report, and mitigate LFA infestations (Hawaii Invasive Species Council, 2016).

Little Fire Ant infestations are identified as having significant economic impact on the agricultural sector in Hawai'i. The promote aphid, whiteflies, and scale insect population growth due to mutualism,

requiring greater use of pesticides to combat these additional pests. It has been reported that farm workers have been severely stung while harvesting; wild honeybee hives in Hawai'i have also been swarmed and destroyed by LFA (Hawaii Invasive Species Council, 2016). Research conducted by the University of Hawai'i's College of Tropical Agriculture and Human Resources (CTAHR) indicates that the potential economic impact across the seven sectors they identified (nursery, agriculture, lodging, residential, parks, schools, and all others) could be as much as \$140 million in economic losses and an estimated cost of \$1.2 billion in treatment and control over the next 10 years based on current management practices for Hawai'i Island alone. The same study suggests that an \$8 million control and removal plan could significantly reduce the economic damages by over 90% (Lee, Motoki, Vanderwoude, Nakamoto, & Leung, 2015).

Coqui Frogs

The Coqui Frog is native to Puerto Rico and was introduced to Hawai'i in the 1980's. The frog's population has exploded on Hawai'i Island and has spread to Maui, O'ahu, and most recently Kaua'i (College of Tropical Agriculture and Human Resources). Some estimates put the population density at 10,000 per acre in the hardest hit locations, a density three times greater than their natural habitats in Puerto Rico. The Coqui has very few natural predators in Hawai'i, which has caused the population growth (Adam Radford, 2007). The Coqui frogs are mostly considered an annoying pest, having most adversely affected the plant nursery industry, which is thought to contribute to their spread. The frogs also affects many other aspects of the Hawai'i economy due to its loud mating call and the impacts it has on native flora and fauna mainly through its voracious consumption of pollinators and other insects important to the ecosystems (College of Tropical Agriculture and Human Resources).

Current control and eradication attempts by the State of Hawai'i Department of Agriculture include education, the use of citric acid sprays, trappings, and containment (Adam Radford, 2007). Efforts have been mostly concentrated on O'ahu and other islands. "As far as eradication, it's impossible on the Big Island," said Arnold Hara, an entomologist at the University of Hawai'i, "We're focusing on containment and preventing the spread of coqui to other islands" (Linn, 2015).

Rat Lungworm Disease/ Mollusk Infestations

Rat Lungworm Disease (RLWD) is a parasitic disease caused by a nematode, transmitted by rats and carried by a variety of snails and slugs that are frequent in Hawai'i including Giant African Snails, Golden Apple Snails, Cuban slugs, the hammerhead worm, and a newer invasive species, the Semslug. The first case of RLWD on Hawai'i was in 1960s but it started to be prevalent in humans in 2004. Humans consume the nematode most commonly through unwashed produce with snail or slug still attached (in some cases the slime trail can contain the larvae of the nematode), but it is easily preventable by thoroughly washing all produce (Hollyer, et al., 2010).

According to a study done by CTAHR the best way to prevent the spread of RLWD is prevention. This includes controlling rat populations as well as snail and slug populations. Strategies listed include: remove unnecessary groundcovers, cut back vegetation, remove rocks and fallen wood, and remove unnecessary items that are stored in contact with the ground around production and processing area. Conversely trapping or luring snails and slugs by placing friendly cover for them along the perimeter of these areas, checking and physically removing the pest daily is a good prevention technique. The addition of bait to the aforementioned lures creates added effect. To protect potted plants or fruit trees, copper foil will work as a barrier/deterrent to slugs and snails. A variety of pesticides or molluscicides such as iron phosphate are also recommended.

Appendix G: Methodology and Authors

Methodology: Research for this report included quantitative analysis of public data sets, review of scholarly and community journals, and study of books relevant to Hawaiian agriculture, culture, and history. Semi-structured Interviews were held with the 147 practitioners listed above. For the most part, interviewees were selected by Hawai'i Food Alliance leaders, who also made contact with each source to schedule meetings during a 2.5-week tour in August, 2016. Primarily these were carried out in group settings. A few select interviews were performed individually. Interviews were held on the islands of Hawai'i, Kaua'i, Lāna'i, Maui, and O'ahu. Telephone interviews from our home offices in Minnesota and Michigan were performed from September, 2016 to February, 2017, with several additional interviews in Honolulu in January, 2017.

We are deeply indebted to all of those who offered such deep insights to our work.

Ken Meter, President of Crossroads Resource Center, is one of the most experienced food system analysts in the US, integrating market analysis, business development, systems thinking, and social concerns. Meter holds 46 years of experience in inner-city and rural community capacity building, and has worked with several tribal organizations. His local economic analyses have promoted local food networks in 125 regions in 39 states and Manitoba. He developed a \$9.85-million plan for local food investment for the state of South Carolina, and has completed similar studies for Alaska, Mississippi, Indiana, Ohio, and Minnesota. Currently he is writing a statewide food plan for Hawai'i focused on low-income access. He has developed strategic regional food plans for regions near Shreveport, Lafayette, Monroe, Fort Wayne, Denver, and rural North Dakota, Virginia, Maine, and Washington State. Meter consulted with the USDA Agricultural Marketing Service and Colorado State University to help write a toolkit for measuring economic impacts of local food development.

Megan Phillips Goldenberg, MS, principal at New Growth Associates and Associate of Crossroads Resource Center, brings seasoned experience producing feasibility studies, economic analysis, and policy recommendations in Colorado, South Carolina, Alaska, Mississippi, and Michigan, with extensive background in project management, survey development, economic impact analysis, academic research, quantitative methods, interviews, and food-based business and organization consulting. Megan is most interested in the intersections of public policy, food systems, and community development. She endeavors to work in an outreach and community building capacity in order to create and maintain a sense of place through better science and informed decision-making.

Goldenberg holds a Masters degree in Agricultural and Natural Resource Economics from Colorado State University. Her coursework emphasized Public Policy and Community Economic Development. Through her graduate research, Goldenberg worked with Be Local Northern Colorado, the Northern Colorado Regional Food System Assessment, Boulder County's Building Farmers Market Track program, and the Building Farmers in the West Beginning Farmer and Rancher Development Program. Prior to joining Crossroads as an Associate, Goldenberg worked for WPM Consulting in Boulder, Colorado as a Food Systems and Policy Associate. She consulted with the USDA Agricultural Marketing Service and Colorado State University to help write a toolkit for measuring economic impacts of local food development.