

Hawaii Hotel Industry-Agricultural Support Initiative

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BACKGROUND

Currently, the hotel industry in Hawaii buys an estimated 28-32% of locally grown agricultural products, of which pineapple is a major purchase. If pineapple were to be removed from the total local percentage, then approximately 17-18% is specialty crop purchases by the hotel industry in Hawaii. The importation of agricultural products to service the hotel industry is 68%, and if pineapple were to be removed, the specialty crop purchases are estimated to be approximately 82% which are currently imported.

OBJECTIVE

The hotel industry in Hawaii wishes to grow the Hawaii agricultural industry by increasing the purchase of locally grown and harvested agricultural products that are food safety certified. The program entitled “From the Farm to the Plate” provides the vehicle of awareness and support for the agricultural industry through this hotel industry initiative.

APPROACH

Key factors and partners in increasing the purchase of the number of locally grown products includes: 1) farmers with defined specialty crops; 2) packers/processors; 3) qualified distributors; and 4) buyers. The hotel industry wishes to buy from the local farmers who are food safety certified. On-site farm food safety education programs provide the training and “coaching” to the farmers prior to requesting for the audit and certification. Programs like the University of Hawaii’s College of Tropical Agriculture and Human Resources Food certification programs help facilitate this process, and other training avenues are available from the mainland of the United States. These “coaching” programs assist farmers with the disciplined protocols in the growing, harvesting, and processing of their agricultural products. The former grant supporting this existing program has expired. As of December 31, 2008, the HDOA Quality Assurance Division Food Safety Audits has conducted 64 food safety certification audits at the farm, packers/processors, and distributor levels for either new or renewal certifications. The number of new certifications in process is 49.

The functionality of the program is to address new and existing farmers to meet the criteria and qualify for the audit and certification in order to increase the buying scope of the hotel industry. Food safety certification will not only enhance the food safety aspects for the hotel industry, but also restaurants and other local market buyers in addressing the safety concerns of our tourists and kama’aina guests.

Local farmers, participating in this program, with the knowledge that the hotel industry is purchasing their products, have a “guarantee” that their product will yield better returns to them and will save the local farmers on sales and marketing costs to find qualified buyers for their products. The reduction on the amount of importation and dependability which Hawaii in general has on agricultural products will improve Hawaii’s sustainability for the future.

FROM THE FARM TO THE PLATE

The specific campaign, entitled “From the Farm to the Plate” is an initiative that provides an incentive to the farmers to develop and grow crops of their choice which the hotel industry will create into featured dishes to serve both the kama’aina and tourists to the islands, providing that food safety certification is in progress or completed. This will further enhance the food experience for our kama’aina and visitors to Hawaii, and will promote the unique flavors and cultural values of our State of Hawaii. The orientation to the farmers, along with representation from the United States Department of Agriculture, University of Hawaii, Hawaii State Department of Agriculture, and the private sector has provided a vehicle that addresses the farmer’s concerns of growing crops without knowing who the intended buyer is. The hotel industry, is willing to commit flexibility to the farmers in addressing 1) crop rotation and seasonality; 2) increased supply/harvest from the farmers to assist them in buying their excess supply; 3) monthly promotions of the specialty crops in each hotel’s food and beverage outlets and in banquets; 4) developing unique menu offerings utilizing the farmer’s specialty crops.

SUPPORT

Support is requested in the monetary amount of \$160,000 to continue the food safety certification program. Tangibly, the goal is to increase the number of food safety certified farmers from the current estimate of 32 farmers by 100 additional farmers within 18 months of the release of the funds.

Status of On-Farm Food Safety Programs in Hawaii 1.14.09

At issue

Many of Hawaii produce farms are not following documented Good Agricultural Practices (GAPs), and are displaying risky behavior on their farms. For example, many farms do not even have toilet or adequate sanitary facilities for their workers. Many farms do not have potable hand wash water or sinks and hand wash soap. Some farms wash produce off in contaminated irrigation water (against Hawaii law). Animals run unrestricted in orchard and field crops on some farms as well as on the grounds around some agricultural water reservoirs. Produce harvesting baskets on some farms are never washed and dragged along the ground where animals might have defecated. Used boxes of questionable safety are commonly used to transport fresh, wet salad ingredients to Chinatown, wholesalers, cruise ships, and the best restaurants in Hawaii.

Hawaii, nor the Federal government, have any laws that mandate even the most basic, common sense agricultural practices (as above). All local and national GAP efforts are voluntary and thus put the public at unnecessary and unknown risk.

Opportunity

Hawaii agricultural entrepreneurs have the opportunity to produce the world's safest food.

Benefit

Increased market share for Hawaii growers over time, reduction of risk that could harm or kill humans. A reduction in risk that could bring on large lawsuits and publicity that could harm the business of agriculture as well as Hawaii's tourism industry. (see this website to see the types of lawsuits and damages from recent food borne illness outbreaks. (<http://www.marlerclark.com>))

Roadblocks to widespread adoption of Good Agricultural Practices

Hawaii's 1200 plus produce growers are generally reluctant to adopt GAPs due to perceived costs and perceived increased workload. Wholesalers, retailers, restaurant buyers, and farmers market operators are reluctant to require adoption of GAPs because they either don't understand the risks, and/or they are afraid that they won't get the produce they need if they require GAPS. Local produce used in Hawaii schools do not have to meet any food safety standards. Simply, the demanders are not requiring safe food from the suppliers. However, growers do not realize they are liable for using best practices, even if they are voluntary. Similarly, buyers are equally responsible for doing due diligence on the raw agricultural commodities that they process or use in their business. Lack of attention to any links in the food chain can have deleterious effects on Hawaii. We have a perfect storm brewing; some unsafe farm practices and a reliance on tourists who want to eat local produce.

Current coaching, auditing, technology and science efforts to address GAPs

UHM's College of Tropical Agriculture and Human Resources (CTAHR) has created an on-farm food safety coaching program. The Hawaii Department of Agriculture (HDOA) has an interlocking third-party auditing program to assess if GAPs are being followed correctly. HDOA is also involved in innovations for the trace-back of agricultural products through its Radio Frequency Identification (RFID) program. CTAHR and HDOA are cooperating on a program to develop standard sampling protocols for fresh produce, and are working to develop the matching protocols for response to a food-borne outbreak. The Hawaii Farm Bureau Federation (HFBF), via legislative aid-in-kind funds, the Economic Development Alliance of Hawaii (via Rural Economic Transition Assistance Hawaii II), US Department of Agriculture, and the US Department of Defense have provided funding for this broad spectrum of efforts in the last 2.5 years. Funds for the HFBF support of CTAHR coaching will be exhausted by April 09.

Producing the Safest Food in the World

On-farm food safety coaching	Third-party audit	RFID trace-back	Field sampling
<p>Who CTAHR coaches on Oahu, Maui, and Hawaii Island work with motivated farmers statewide to prepare them to pass a third party audit.</p> <p>Funding HFBF (via legislature). \$160,000 Ends: 3/31/09.</p> <p>RETAH some part of \$100,000. Ends: late 2009. Restricted use.</p> <p>Pays for Salaries (HFBF \$), farm supplies, audits at HDOA.</p>	<p>Who HDOA provides PrimusLabs third-party audits to growers. To receive CTAHR funds client must have gone through coaching program.</p> <p>Funding Audits are paid out of funds from CTAHR's/HFBF food safety coaching program.</p>	<p>Who HDOA works with Hawaii produce business and technology companies to trial RFID tags and readers. Also created a business website for listing and promoting audited farms.</p> <p>Funding USDA, Department of Defense, others. \$600,000. Ends: various times.</p> <p>Pays for Equipment, prototypes, supplies, computers, sub-contracts.</p>	<p>Who CTAHR and HDOA.</p> <p>Funding HFBF (via legislature). \$79,000 Ends: 9/31/09</p> <p>Pays for Lab tests, some salaries, field supplies.</p>

Increasing Market Potential by Reducing On-Farm Food Safety Risk for Socially Disadvantaged Produce Growers in Hawaii

Project Summary

Food-borne illness outbreaks, deaths, and lawsuits continue to rise in the U.S. with significant economic impacts. Many outbreaks are preventable with proper education of food growers. Unfortunately, education of growers on on-farm food safety is voluntary and enforcement of Good Agricultural Practices (GAPs) is not on the Food and Drug Administration or the U.S. Department of Agriculture's current agendas. The U.S. food system and U.S. consumers are at unnecessary risk and it behooves Land Grant educators to step in and do what they can to inspire their grower/clients to voluntarily transform their business into one where food safety is a priority.

In Hawaii, only about 30 of 1400+ produce farms have passed a third party audit at the end of 2008. This lack of knowledge and/or compliance of GAPs by Hawaii food growers puts Hawaii's nearly 1.3 million residents and over 5 million visitors at some level of risk if they eat local produce. The lack of attention to GAPs can also put Hawaii's growing diversified agriculture industry in jeopardy as one large food-borne outbreak can create so much fear in consumers' minds that they avoid certain products for an extended period of time. California spinach is a good example.

We propose to continue our on-farm food safety coaching with Socially Disadvantaged Farmers (SDF) in Hawaii because they represent the highest percentage of growers by ethnic cluster, and they grow a great deal of our fresh produce. The return on investment to working with SDF will be significant.

Introduction

According to a recent article in USA Today (2008) Americans are getting increasingly concerned about their domestic food supply. Wal-Mart, one of the largest food retailers in the world, has even stepped up their food safety efforts by being the first U.S. company to sign on to the Global Food Safety Initiative (ANSI, 2008). Between 1996-2006 there were 72 reported produce-related food safety outbreaks in the U.S. (Parsons, York, Shiekh, and Holden). As a result, there are a growing number of lawsuits brought by firms such as MarlerClark in Seattle (www.marlerclark.com). These lawsuits indicate that the public is taking the safety of the food they eat seriously. They should take it seriously, as even 1999 statistics from the U.S. Centers for Disease Control and Prevention indicate; food safety is a serious health and economic concern: 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year at a cost to the economy of \$5.4 billion (Mead et al., 1999).

Despite calls from the Director for Food Safety of the World Health Organization, Jorgen Schlundt, for comprehensive oversight of our food systems, only just recently has the U.S. Food and Drug Administration begun to move in earnest on overhauling the U.S. food safety system and they still seem to be concentrating on food manufacturing (Martin). Schlundt says, "If you want to deal with food safety you have to go from the 'farm to the fork'. The notion that you can deal with it at the end of the food chain is clearly wrong," he told Reuters, adding that "regulatory authorities often fail to work together effectively in many countries (WHO, 2008)." This overhaul is so overdue that the U.S. Government Accounting Office made it one of the 13 top priorities they are

suggesting to the Obama administration (Government Accounting Office, 2008). It also appears that while the FDA's 1998 Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables, aka Good Agricultural Practices (GAPs) Voluntary Guidelines, is undergoing review at this time (Food and Drug Administration, 2008), there is still no indication that any aspect of the GAPs will become mandatory. In Hawaii, professional or vocational licenses are required for barbers, tattoo parlors, travel agencies, and cosmetologists, among others, but licenses are not required, nor is there any system of comprehensive oversight, for the people who grow our food. Thus, consumers will continue to be put in harm's way unnecessarily because there are no national standards and enforcement when it comes to food production. One potential future is for the Western Growers Association's (WGA) new, Leafy Greens Good Agricultural Practices, requirements to become the *de facto* standard for commercial produce production in the United States (Western Growers Association, 2008). The standards are *required* for growers in the WGA, and wholesalers, retailers, hotels, restaurants, and other large food-using customers might begin to require these standards en masse, if outbreaks in our food system continue.

Right now, one of the largest growing populations of farmers and the largest growth in acreage is coming from immigrant farmers in Hawaii. Unfortunately, the news coverage on on-farm food safety does not often reach ethnic growers in Hawaii who do not speak English, who do not read newspapers, or who do not have access or do not use the Internet to look for such information. For many growers in Hawaii, even the non-ethnic farmers, it is simply not on their business radar or the "volume" is turned down so low because wholesalers are not yet requiring third party audits, that food safety is going largely ignored. To add to this, with Hawaii's geographical isolation, we do not have the same commercial peer pressure that might come from growers in the state next door. Thus, many Hawaii growers are simply unaware of the reasons, risks and solutions to food-borne problems that could very well be originating on their farms. This lack of knowledge clearly puts many Hawaii growers at a disadvantage when compared to the hundreds of more organized growers in California and Arizona who have signed onto WGA's Leafy Greens Good Agricultural Practices program. This lack of compliance with the voluntary FDA or WGA Good Agricultural Practices also puts Hawaii's multi-billion dollar visitor economy at risk. Hawaii's tourism-based economy is very sensitive to media reports and disasters, especially if the visitors are coming from Asia (Bonham, Edmonds and Mak, 2006).

In 2007, there were 5,500 total farms in Hawaii. This number includes animal ranches, flower nurseries, commercial seed farms, orchard crops such as macadamia nut and coffee, and produce crops (lettuce, tomatoes, basil, taro, ginger, etc.) (Economic Research Service, 2008). It is estimated that *at least* 1,000 (could be as high as 2,000) of these farms grow food crops that are of potential concern when it comes to on-farm food safety. The annual value of these crops is over \$125 million (HASS, 2007b). The export value of some of the crops and value-added products is nearly \$90 million (HASS, 2007b). At this time, slightly over 30 of the 1,000 farms have been coached and passed a third party audit in the past two years. In our direct experience, potential risk factors on many of Hawaii's produce farms include:

- Lack of toilet facilities and hand wash sinks for employees (despite OSHA regulations requiring them).

- Pathogen-contaminated irrigation and produce wash water being used on food crops that are not cooked (there are no U.S. or Hawaii standards on irrigation water quality and most growers don't know that wash water must be potable by Hawaii law).
- The unacceptable accumulation of “stuff” on farms that is attracting rats, geckos, pigeons, stray cats and other pathogen-carrying animals who can easily contaminate production surfaces with their feces. Wild pigs and deer are also part of some of our production areas.
- The mixing of animals with produce operations so that ducks, chickens, and goats can either eat insects or grass and weeds is part of some operations. This behavior is especially supported in the organic industry where growers don't realize the risk they are taking on with having ducks, for example, eating slugs in their lettuce patches. Similarly, many of our ethnic farmers, aka Socially Disadvantaged Farmers, come from countries where it is common to have animals as an integral part of a farm and life in general. Thus, most do not even recognize that this blending could ever be a problem.
- The imprecise use of crop protection chemicals and the lack of recording of all applications is an automatic failure in the third party audits.
- The common reuse of cardboard boxes, many from the alleys of our Chinatown, for the transportation of produce to markets, and the lack of any trace-back information on most boxes. This means, that fresh wet lettuce or basil could easily be put in a box that once held imported bananas that were sprayed with a preservative or other chemical.

In February, 1999, Safeway, Inc., a large grocery store chain, sent a letter to all their suppliers, including those in Hawaii, insisting they get third party audits by May 31, 1999. Since that month, we have been involved in learning, developing and delivering of an on-farm food safety program. Safeway said, in their now famous letter, that growers would all have to be audited by the May date or be removed as a Safeway supplier (Safeway, 1999). The threat never manifested in Hawaii, but it did get some growers' attention and grabbed the ear of the Hawaii Farm Bureau Federation who called this projects' PI, Jim Hollyer, to help the farmers meet Safeway's demands. As a result of this early contact, we are the only on-farm food safety coaching service in Hawaii and all team members have received PrimusLabs.com training and some have also had the USDA Agricultural Marketing Service' training as well. The Hawaii Department of Agriculture is our partner in that they are providing the auditing service. We have harmonized and interlocked programs based on the PrimusLabs.com audits.

Since the Safeway letter, we have worked with New Mexico State University on a half-hour “This Old House”-like outreach television program, developed a poster for showing all the transformation steps on a farm, and have developed a complete how-to kit for growers so they can prepare for an audit (<http://www.ctahr.hawaii.edu/adap/FoodSafety/index.htm>). We have also held a variety of workshops statewide. In all this, however, nothing works better for transforming a farm than one-on-one farm-specific coaching. The number of permutations on what needs to be fixed on each farm is so great, that growers were not doing much even after attending a workshop with colleagues. As such, in 2006 we received a \$160,000 grant from the Hawaii Farm Bureau Federation to prepare the educational tools that matched

the PrimusLabs.com audit, and to travel statewide to all islands coaching transformation, and to pay for the first year of the audit for growers who would completely engage in our program. The Hawaii Farm Bureau represents most of our produce growers in the state and has made food safety one of their top priorities in the last two years. They also operate the five largest and most successful farmers markets. These markets, as it turns out, are also somewhat of a concern to us because there are no best practices for this type of sales methodology.

While our coaching has been successful with some early adopters, there are at least 950 farms (and perhaps up to 2,000) that still need our coaching if Hawaii agriculture is to protect itself and our consumers from food borne-illnesses that could result from the types of issues listed above. One of the unique aspects of living on the most isolated island chain on Earth, is that we do not have the intense economic pressures coming from many retail or restaurant chains because they feel they are lucky to even have some local produce, and frankly, do not want to pressure farmers because they fear the farmers will no longer sell to them, thus putting the store at a competitive disadvantage. It is a vicious and dangerous cycle of enabling that we are breaking with our coaching. Our project mantra is that, "Hawaii will (eventually) grow the safest produce on the planet, period."

Hawaii's Socially Disadvantaged Farmers

According to a 1994 report by the USDA Natural Resources Conservation Service on reaching out to minority farmers, the highest percentage of Asian and Pacific Islander farms exist in Hawaii and California (USDA, Natural Resources Conservation Service, 1994).

The total number of Hawaii farm and ranch operators published in the 2002 Census of Agriculture totaled 8,009 (USDA, 2002). Race information was collected for a maximum of three operators per farming operation in a special release by the Hawaii Agricultural Statistics (2005). Thirty-seven percent or 2,969 of Hawaii's farm operators reported their race as Asian. These Asian farmers operated 157,235 acres, or 12 percent of 1,300,499 acres of Hawaii land in farms. The census definition of a farm is a place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year.

Sixty-one percent or 1,814 of Hawaii's Asian operators are Japanese, making up the largest category. Japanese operators cultivated 117,235 acres or 75 percent of the total farm and ranch lands operated by Asians in Hawaii.

The second largest number of farm operators was Filipino with 731 or 25 percent of the total Asian operators. Filipino operators made the day-to-day decisions on 22,034 or 14 percent of the total land in farms operated by Asians in Hawaii.

Chinese operators were the third largest category operating farms in Hawaii with 220 operators. Operators surveyed who classified themselves as "Other Asian" totaled 168 and Korean operators summed to 36.

Native Hawaiians consist of 571 operators making the day-to-day decisions on 168,634 acres. Total acres operated by Native Hawaiian operators were 7 percent of all Hawaii farm and ranch operators and 13 percent of the land in farms.

One percent of Hawaii farm and ranch operators are comprised of "Other Pacific Islanders" totaling 84 operators. Land in farms operated by Other Pacific Islanders was

10,720 or less than 1 percent of the 1,300,499 acres of land in farms for the State of Hawaii.

Of these farms, 1,409 are growing vegetables and melons, considered to be a high-risk category of crops that are being sold to the predominantly Asian and Pacific Island ethnic group living in the islands.

Trends in Hawaii Agriculture Affecting SDFs

With the recent changes that have affected Hawaii agriculture, namely the housing development pressure on farmland and the downfall of the sugar industry, new opportunities for socially disadvantaged farmers have emerged in terms of diversified agriculture and alternative market opportunities. But this has also meant an increase in the number of farms needing to understand and be trained to adopt GAPs on their farms. It was not until 2007 that the College of Tropical Agriculture (CTAHR), the Hawaii Department of Agriculture, the Hawaii Department of Health and the Hawaii Farm Bureau collaborated in an effort to start making food safety a priority in their organizations. In the past year, CTAHR farm food safety coaches have reached out to over 160 farmers statewide to educate them about GAPs and the food safety third party audit certification process. As of 2008, just over 30 farmers have successfully passed a third-party audit and become food safety certified. However, this important work needs to continue if our farmers are expected to continue to own and operate their farms successfully in a world where buyers are slowly beginning to demand proof that farmers are operating under GAPs. If Hawaii farmers do not adopt GAPs as a standard operating procedure, they will have an increasingly difficult time selling their produce and ultimately staying in business, a prognosis that does not bode well for a state where 45 percent of farmers are part of the “socially disadvantaged group” described in the definitions section of this RFA. For example, Hawaii’s Lao, Thai and Chinese farmers have a corner on the fresh basil market and export nearly 90% of what they grow. Exported basil is estimated, by the Hawaii Department of Agriculture, to have a value of \$4.8 million (Sharon Hurd, personal communication, November 26, 2008). If anything were to happen that tarnished the reputation of Hawaii basil in Mainland markets, it could have a serious impact for the many families who rely on the income from this herb.

Recent Reconnaissance Justifying the Need for This Project

CTAHR coaches have been working with Hawaii farmers and processors to prepare for a third-party audit that may allow them to achieve food safety certification. But as the need to increase local food production is starting to appear on people’s radar screens, the cost of this type of safety assurance may appear to be yet another financial burden for small farming operations. This past years’ coaching and auditing efforts, funded by the Hawaii Farm Bureau Federation, have been offered free-of-charge to farmers. (These funds, however, will finish by March 31, 2009 by contract.) One such activity that had significant impact was six “Produce Safety” workshops conducted statewide between October and December 2007. A total of 77 participants attended and completed a water-use survey that brought to light the water issues we face in the islands.

Growers are primarily using municipal water (26.3%) and non-potable water (23.3%). The majority of growers completing the water-use survey are also producing multiple crops, including tomatoes, cucumbers, and eggplant at almost 23 percent,

followed by lettuce and leafy greens at 22 percent, and leafy crucifers at almost 20 percent. In the investigation of the California 2006 outbreak of *Escherichia coli* O157:H7 associated with spinach, the FDA identified water quality as a potential / probable vehicle of contamination with feral pigs as being a likely source of the original feces (Jay et al., 2007). There are many ways for produce to become contaminated by harmful or disease-causing microorganisms during planting, growing, harvesting and handling (post-harvest handling/processing). Water is just one potential source. As this survey clearly indicates, there is a need for outreach and assistance to ensure that Asian and Pacific Island farmers, who make up 45 percent of Hawaii's agriculture work force, do not endanger the lives of residents and visitors alike by their lack of knowledge, or a strong commitment to operating their farms under GAPs.

Payoff to Stakeholders

Residents: Because the population of Asians in Hawaii, about 55% and by far the highest in the nation, it is a (green) vegetable-eating state to a large degree (Department of Business and Economic Development, 2008a). And, with the Hawaii State Government and the Hawaii Farm Bureau Federation pushing consumers to *Buy Fresh / Buy Local*, making sure that produce is safe has a great deal of value to Hawaii's 1,283,400 residents (Department of Business and Economic Development, 2008b).

Visitors: Hawaii's multi-billion dollar visitor economy hosts over 5 million visitors each year and there is currently a significant push by the Hawaii Farm Bureau Federation and the Hawaii Department of Agriculture to encourage residents as well as visitors, and now restaurateurs, to *Buy Fresh / Buy Local*. Locally-grown produce must be as safe as possible if we are to protect Hawaii's fragile visitor economy. According to the Hawaii Department of Health, Hawaii has had a number of food-borne illness cases, though it is unclear/unknown how many are directly attributable to Hawaii-grown produce (Table 1). Conversations with the Hawaii Department of Health employees indicate that cases of food-borne illnesses are underreported. If Hawaii was to experience an outbreak as severe as the 2006 California spinach disaster it could damage the reputation of Hawaii-grown produce for many years to come. Given that fact that 16 of 19 cases of *E. coli* were "Hawaii-grown" in 2006, we undoubtedly have the risk factors (Table 1, see red line and arrow).

Table 1. Number of food-related events in Hawaii as recorded by the Hawaii Department of Health, 1997-2007.

EVENT NAME	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Campilobactor	822	621	883	834	755	890	651	684	558	586	182
Ciguateta	57	69	43	37	59	69	58	32	26	25	5
<i>Escherichia coli</i>	11	19	15	14	22	37	9	10	13	19	7
Giardia	162	123	117	104	118	91	94	80	64	58	35
Salmonella	387	295	338	237	356	268	230	375	290	265	101
Shigella	65	51	34	38	59	71	46	49	35	45	14

Escherichia coli in detail

IMPORTED Status	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Indigenous to Hawaii	6	13	10	11	21	28	6	10	10	16	2
International	1				1	1				1	
Other States in US		1		1			3			2	1
Unknown	4	5	5	2		8			3		4

National – Hawaii’s Diversified Agriculture, other than sugar and pineapple, is worth at the farm gate some \$445 million in 2005 (Leung and Loke, 2008). Many of Hawaii’s fresh produce commodities end up in the U.S. Mainland or Canadian markets. These include papaya, herbs, macadamia nuts, and vegetables. The annual export value is at least \$90 million (Hawaii Agricultural Statistics Service, 2007b). Whenever there is an outbreak (Table 1) it puts all of Hawaii food agriculture at risk. Thus, our program is focused on reducing that risk as fast as possible.

Value of Passing a Third Party Audit – including Taking Better Advantage of U.S. Government Programs

As discussed above, if a grower puts the time and effort into preparing and passing a third party on-farm food safety audit, they enjoy:

- Holding on to existing markets that now require a farm to prove they are using GAPs
- A marketing advantage that most other growers do not have. This can help them grow market share and potentially command a higher price for their significantly-safer product.
- Knowledge that they are reducing their risk to their business and their consumers.
- But also, growers may be able to take better advantage of the USDA *Sustainable Agriculture Research and Education* (SARE) program as well as the U.S. Small Business Administrations’ HubZone Empowerment Contracting program. Not only is the entire state of Hawaii considered a “Historically Underutilized Business Zone,” but the islands are also considered “Difficult Development Areas,” making it imperative that we keep agriculture and farming a viable business opportunity for its citizens.

Current Activities – The Hawaii Farm Bureau-funded Coaching Project (2006 – early 2008)

This proposed project builds on the College of Tropical Agriculture and Human Resources’ Food Safety GAP program for commercial fruit and vegetable growers implemented statewide in 2006– early 2008. As mentioned above, thanks to the Hawaii Farm Bureau Federation we have been able to establish a comprehensive, rapid-response

program for growers who want to prepare and pass a third-party audit, such as PrimusLabs.com. During the length of this short project, we have provided the following activities:

- Conducted on-farm food safety introduction programs, allowing farmers to acquire one pesticide safety credit, on four islands (Oahu, Maui, Kauai, and Hawaii [Kamuela and Kona]).
- Met with our advisory group of the Hawaii Department of Health, the Hawaii Department of Agriculture, and the University of Hawaii to reach an agreement as to appropriate recommendations to give our clients regarding farm food safety protocols, and Hawaii statues on water quality, box labeling, and trace-back requirements.
- Developed a standardized rocker stamp (could be used on a label as well) for Hawaii farms to aid in produce identification and trace-back.
- Performed extensive research into various farm food safety products (such as hand washing sinks, water sanitizers, and water testing supplies) and developed a recommendation list (with the names of potential vendors) of supplies that clients would need to meet audit requirements.
- Obtained clarifying language and documents from Hawaii's Department of Health and Department of Agriculture regarding current regulations affecting farm operations.
- Began identifying potential clients and/or made introductory farm visits (40 as of this date).
- Given all clients a personalized checklist of items that they would need to address in preparation for a farm safety audit with follow-up calls to monitor progress and offer additional information tools as needed.
- Began working with 20 engaged clients to develop their on-farm safety manuals and clean up their farms.
- Launched a Hawaii On-Food safety Website to house informational tools for use by regulators, educators and growers on topics related to on-farm food safety. www2.ctahr.hawaii.edu/adap2/FoodSafety/index.htm
- Developed a number of short teaching videos for clients on best practices for on-farm food safety (<http://www.ctahr.hawaii.edu/adap/FoodSafety/videos.htm>)
- Strengthened communication and collaboration between agencies, industry and the university in the area of on-farm food safety.
- Designed, with the Hawaii Department of Health, the Hawaii Department of Agriculture, and the Hawaii Farm Bureau Federation a set of eight unique farm signs that need to be on farms to pass an audit. They are now available to all client in aluminum. http://www.ctahr.hawaii.edu/adap/FoodSafety/Docs/Farm_Food_signs.pdf
- In the process of developing a new chlorination poster for farms so that they can properly chlorinate their produce wash water to the correct specifications of the crop they are washing.
- In the process of developing a cost and effectiveness comparison for solar, UV, ozone, and chlorine water contamination technologies.
- Working with a Hawaii-based attorney to understand and document legal liability concerns regarding farm-grown food.

Objectives

In the past, socially disadvantaged farmers have been handicapped by public policies that excluded them or did not meet their needs or that we simply do not know where to find them (because production data and farm addresses are confidential information protected by the National Agricultural Statistics Service and the local state affiliates). Simply, in many ways they are “invisible.” Given the risk and benefit factors listed above, this project will address the following objectives:

1. Provide our educational/coaching materials, which are now in English, in the languages of Hawaii SDFs.
2. Coach the transformation of at least 30 new SDFs farms each year so that they can pass a third party audit. The amount is largely dependant on growing a list of motivated clients. From our current experience, this process requires up to five one-on-one, on-site coaching sessions before the farmer is ready to pass an audit.
3. Once audited and certified, expose SDFs to best marketing practices for their products so that they can continue to maintain or grow their market share.

Methods

This project will address the following objectives:

A. Stakeholder involvement

- a. To meet with/speak to wholesalers statewide to understand their growing demands for on-farm food safety from their produce suppliers.
- b. To work with the informal ethnic networks via industry leaders, for example, all the Chinese farmers in Waianae, Oahu (about 20), to identify willing SDF clients from around the state.
- c. To work with local representatives of federal agencies, such as the USDA Farm Service Agency and Natural Resource Conservation Service, to have them introduce us to their SDF clients.

B. Project activities in the sequence to be carried out.

- a. Translate the educational materials we have produced into the languages spoken by our target farmers. For instance, we have developed a farm investigation questionnaire that we use to assist us when coaching farmers in the first farm visit. This two-page sheet will be translated into other languages.
- b. With the help of wholesalers, identify at least 30 new SDF farmers/farms each year.
- c. Provide one-on-one coaching to facilitate development of the following: a map of production fields, record keeping system, standard operating procedures manual, personal hygiene facilities, removal of animal activities from food production areas, enhanced sanitation practices in field, harvest and packing operations, and regular worker training.
- d. Provide a “How to establish a trace-back or a recall program”. Currently, there is no tool to teach the steps taken during a trace-back investigation supported by graphics and visual aids, yet this is one of the most asked about areas by farmers that have been coached. A well-designed model of how to develop and implement a trace-back program on a farm will be provided.

- e. Work with the Hawaii Farm Bureau Federation and the Hawaii Department of Agriculture to add a third component to the *Buy Fresh/Buy Local* campaign. We will promote a *Buy Safe* factor thus increasing the marketability of Hawaii producers to consumers looking for food safety and quality control in their food purchases.

C. Techniques to be employed

This proposal aims to target our four counties: City and County of Honolulu, Maui (island of Maui, Molokai, and Lanai), Kauai, and Hawaii. The targeted counties have a significant number of underserved farming audiences. In general, SDFs do not usually attend traditional Extension meetings and workshops due to many reasons including geographic distances, communication breakdown, and previous experiences with government programs. Some are even “afraid” of the government because of things that might have happened in their countries years ago. Communication through non-traditional networks will be used to reach the underserved populations. Our work will include farm visits, one-on-one technical assistance, hands-on workshops and seminars, and initial networking events.

Socially disadvantaged farmers often struggle to find and use appropriate information. Most of them experience frustrations of not being able to locate answers to specific questions, not understanding the information presented, and being overloaded with too much information to filter through to find what they need. This project builds on our existing community outreach efforts and the materials that have been developed and successfully deployed to make the information easy to understand and quick to adopt. Our training includes hands-on experiential learning to teach complex ideas. For instance, to teach about the threats of microbial contamination, our coaching includes a training to enhance awareness and improve the effectiveness of hand washing using a UV light sensitive-lotion that is applied to hands as “pretend germs.”

D. Anticipated results

- a. Each year of this three-year project we will transform at least 30 SDF farms statewide.
- b. Each grower will have considerably more knowledge about why their farm was creating a risk and what they need to do to remove that risk, and to maintain a low-risk business.
- c. Each business we transform will be able to hold onto their existing market, if not grow their market share as a result of our coaching.
- d. While it will be difficult to quantify what the reduction in the risk factor to Hawaii agriculture or a specific consumer for each farm that successfully passes their third party audit, we know that tainted food from even one farm or unhealthy employee can result in deaths, losses to the particular operation, and sever impact on the commodity and the area (region, state, country) where that the crop has been grown.
- e. Each successful coaching client will be in a better position to avail themselves of U.S. Federal programs such as SARE.

E. Data collection and analysis methods

- a. This data will be collected on each client:
 - i. Ethnicity
 - ii. Acreage
 - iii. An assessment of their risk factors
 - iv. Days from initial coaching session to passing the audit
- b. Follow-up data to include within 3 months of the passed audit
 - i. Any new business attributable to their passed audit
 - ii. Any increase in confidence about their business skills

F. Possible pitfalls

- a. Lack of pressure by the produce industry keeping growers in a state of “waiting” until they are pushed to do audits from wholesalers of national or state regulations. This would result in less farms being willing to go through the transformation process.
- b. Technical/scientific language may cause confusion especially for farmers who have a limited knowledge of science.
- c. Assuming that a farmer understands just because they imply comprehension. Working with individuals who are not fluent in English may cause misunderstandings. Sometimes people say they understand even when they do not to avoid embarrassment and because they are trying to be polite.

G. Possible limitations to proposed procedures

- a. The farmers we coach and who pass in the first year of this grant may not follow-up in the next year to get themselves ready and past the next audit. Although a voluntary program, being food safety certified means being audited on a yearly basis to stay certified. There is no guarantee that the farmers who comply the first time via our coaching and training efforts, will then comply thereafter when left on their own. Therefore we will conduct a study to understand why farmers choose not continue in their efforts to be certified. This study will be the first exploration of the human dimension of food safety practices on a farm. The study of the practice of food safety is a study in human behavior, and the problem of infrequency of use and inconsistency of application of food safety measures exists in many farm operations. Therefore, in a broad sense, the findings of this study are important to all produce operations and would be of use to both farm managers, and Extension personnel hoping to improve the practice of food safety on any farm.

H. Best practices and plans on dissemination of models

- a. Our coaching system has worked very well for the last two years. We can get a farm cleaned up and audited within two weeks, but we also have clients that have dragged their feet for 9 months. The system works very well, but we have no control over client behavior since GAPs are still voluntary.

- b. Our current materials are on our website and everyone is welcome to them right now (<http://www.ctahr.hawaii.edu/adap/FoodSafety/index.htm>). For example, we have a 14-language handwash sticker that is available on our site along with our 2-page checklist and the set of 8 signs that are required by the PrimusLabs.com audit.
- c. As we develop more tools, they will also be placed on our site for free use. We are part of the Cornell Food Safety project and are connected to many food safety educators nationwide; we freely share our information.

Time table

We have planned this project for a 3-year time horizon. While some tasks stay the same, some are year specific. These tasks are subject to change given new information.

	Work Months																																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36			
Year 1																																							
Translate materials	█	█	█	█	█																																		
Network establishment	█	█	█	█	█	█	█	█	█	█	█	█																											
Coaching	█	█	█	█	█	█	█	█	█	█	█	█																											
Impact assessment												█	█																										
Year 2																																							
Coaching																																							
Impact assessment																																							
Year 3																																							
Coaching																																							
Impact assessment																																							
Final project assessment																																							█

Evaluation

The project’s evaluation plan will include both a process evaluation and outcome evaluation.

- The number of farmers who begin and who stay with the process, paying particular attention to the stages at which people may choose to leave the training.
- Anecdotal comments and conversations with farmers will be used as an evaluation tool.
- Demographic data on the socially disadvantaged farmers served will be collected.
- After the participant has passed the on-farm food safety audit, the farmer will be asked to evaluate this training program with a survey designed to rate the program on a variety of parameters, including the quality and value of the information, the coaches, the educational materials, as well as other aspects of the event. These evaluations will be used to review and assess each phase of the project, both to build on the strengths, and to identify areas that need to be improved and corrected.
- The audit scores will also be evaluated to better understand what areas in the coaching program need to be improved. If farmers are scoring low in certain parts of the audit, we will be able to adjust our coaching to improve those areas of training.
- Criteria for the success of the training program will also be based on seeing significant, measurable growth and success in sales and opportunities in

production and marketing by the socially disadvantaged farmers or they fact that they are being able to hold on to an existing market because they are fulfilling exist customer's new demands for a third party audit.

Budget

With up to 1400–2000 farms to coach, we need at least three years to make an appreciable impact on the number of farms who pass a third party on-farm food safety audit. The following budget is requested to meet those ends.

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