



THE DEMAND FOR INTERISLAND SHIPPING AND THE IMPACT OF SHIPPING COSTS ON HAWAII AGRICULTURAL PRODUCTION

**PREPARED FOR:
Hawaii Agribusiness Development Corporation**

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In Conjunction with High Technology Development Corporation's
Manufacturing Extension Partnership Program**

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Editor's Note

For several questions the survey uses the phrase “new policy” to describe Young Brothers’ proposal that shippers use full containers. This phrase is based on the filing of an application to the Hawaii State Public Utilities Commission in April 2006 by Young Brothers, seeking approval to amend its Tariff No. 5-A by discontinuing less than container load service to and from Kahului Harbor. Soon after, the Hawaii Department of Transportation (DOT) and the Hawaii Department of Commerce and Consumer Affairs (DCCA) entered into a Memorandum of Understanding (MOU) with Young Brothers Limited (YB) to continue LCL cargo service to and from Kahului Harbor on the island of Maui, and Hilo Harbor until at least January 1, 2010, and to and from other State harbors until at least January 1, 2012. Subsequently YB spokespersons have said this phrase was not an accurate representation of corporate policy and that there is no such “new policy.” No specific alternate explanation was made to the author as to how to better describe this action. (An alternate interpretation might be to describe it as a “proposed policy.”)

EXECUTIVE SUMMARY

Small lots of goods on pallets that have been carried on ships and barges have been the primary mode of interisland transport in the State of Hawaii. Young Brother's (YB) interisland cargo facility is the central hub of the interisland shipping transportation supply chain network.

In 2006 YB applied to the Hawaii Public Utilities Commission (PUC) to discontinue less than a container load (LCL) shipments to and from Kahului Harbor. Kahului Harbor has been identified as the most congested harbor in the State due to increased cargo traffic over the years without corresponding infrastructure expansion. In 2006, the Hawaii Department of Transportation (DOT) reassigned 23% of the already fully maximized YB harbor space at Pier 2 to the new Superferry. YB and DOT determined that elimination of LCL activity could offset the loss of workable footprint area.

The Hawaii Farm Bureau Federation (HFBF) was recognized by the PUC as a legitimate party to act on behalf of its farmers and ranchers in the YB application proceedings. Subsequently, HFBF and YB agreed to a Memorandum of Understanding (MOU) to address agricultural community concerns in the LCL issue. Soon after, the DOT and the Hawaii Department of Commerce and Consumer Affairs (DCCA) entered into a MOU with YB to continue LCL cargo service to and from Kahului Harbor on the island of Maui, and Hilo Harbor until at least January 1, 2010, and to and from other State harbors until at least January 1, 2012. DOT identified additional operating space for YB at Kahului Harbor and agreed to provide additional property at other state harbors for YB's use. However, no additional or interim compensatory space protected from the elements was provided for farmers.

While affordable and reliable shipping of agricultural products and supplies was a primary concern, food safety and invasive species were also significant issues. Agricultural products exposed to the elements during the shipping process not only results in reduced product quality but affects food safety for consumers as well.

Shipping containers are a principal source of invasive species spreading through water borne commerce. Invasive species are a significant concern to not only Hawaii's farmers and ranchers but to the entire Hawaii ecosystem. Hawaii Department of Agriculture (HDOA) Biosecurity measures require increased levels of inspection, challenging the Department's current inspection capacity and past practices by cargo carriers. While all of these measures increase shipping costs, there is an equally significant liability for the State, farmers and buyers if regular inspections are not done.

Implementation actions to resolve issues raised above require data defining the scope of Hawaii agriculture's utilization of LCL services. Data regarding cargo type and volume at various ports was not available. This study was contracted to secure this information.

205 agribusinesses and 38 food manufacturers across the State of Hawaii were surveyed by phone during the summer of 2007 to characterize LCL cargo utilization. The survey did not constitute a detailed financial analysis of individual farmers and agribusinesses or of transportation interests. It also did not include the identification of solutions to the issue.

The survey showed:

- 100 % of farmers and food manufacturers surveyed use interisland ocean transport.
- 69.9% of interisland farmer and rancher shipments in 2006 were LCL (95,826 tons).
- 81.3% of farmers and ranchers utilize LCL for in-shipments of supplies and materials.
- The majority of farm interisland exports are by LCL cargo (see table 12).

Table 1. Demand for Shipping by Farmers: 2006

<i>County</i>	Ocean Freight (tons)			Air Freight (tons)			<i>Total shipment (tons)</i>	<i>% of ocean freight</i>
	<i>Products going out</i>	<i>Supplies coming in</i>	<i>Total</i>	<i>Products going out</i>	<i>Supplies coming in</i>	<i>Total</i>		
Honolulu	6,361	905	7,266	238	913	1,151	8,417	86.3
Maui	4,403	4,063	8,466	390	2,000	2,390	10,856	78.0
Hawaii	110,489	6,049	116,538	24,654	3,143	27,797	144,334	80.7
Kauai	597	4,169	4,766	28	1,319	1,347	6,113	78.0
Total	121,850	15,185	137,035	25,311	7,375	32,686	169,720	80.7

Note: Products going out = average tonnage shipped out per farm (From survey Q5 for ocean freight, Q14 for air freight) × % of farms that used ocean freight and % of farms that used air freight for shipping out (from survey Q1 and Q3B) × total number of farms (from USDA Census of Agriculture 2002).

Supplies coming in = average tonnage shipped in per farm (from survey Q16 for ocean freight, Q22 for air freight) × % of farms that used ocean freight and % of farms that used air freight for shipping in (from survey Q1 and Q3B) × total number of farms (from USDA Census of Agriculture 2002).

See Appendix D for detailed calculation methodology.

Table 2. Container Status of Ocean Freight: 2006

<i>County</i>	LCL (tons)			Full containers (tons)			<i>Total ocean freight (tons)</i>	<i>% LCL</i>
	<i>Products going out</i>	<i>Supplies coming in</i>	<i>Total</i>	<i>Products going out</i>	<i>Supplies coming in</i>	<i>Total</i>		
Honolulu	3,817	603	4,420	2,544.48	302	2,846	7,266	60.8
Maui	2,862	2,235	5,097	1,540.92	1,828	3,369	8,465	60.2
Hawaii	81,762	2,123	83,885	28,727.10	3,926	32,653	116,538	72.0
Kauai	477	1,947	2,424	119.37	2,221	2,341	4,765	50.9
Total	88,918	6,908	95,826	32,931.87	8,277	41,209	137,034	69.9

Note: Products going out with LCL = total tonnage shipped out by ocean freight (From Table 1) × % of tonnage shipped out with LCL (from survey Q8/Q5).

Supplies coming in with LCL = total tonnage shipped in by ocean freight (From Table 1) × % of tonnage shipped in with LCL (from survey Q19/Q16).

Products going out with full containers = total tonnage going out by ocean freight (from Table 1) – tonnage going out with LCL (Table 2).

Supplies coming in with full containers = total tonnage coming in by ocean freight (from Table 1) – tonnage coming in with LCL (Table 2).

See Appendix D for detailed calculation methodology.

The following considerations and recommendations are made based on the findings of this report.

Considerations:

- LCL cargo is needed for intrastate movement of goods.
- Agricultural LCL cargo includes not only fresh agricultural products but value added goods using locally grown agricultural products, materials, and supplies, including fertilizers and pesticides.
- Harbor front real estate is at a premium. Ongoing congestion issues suggest that consolidation/deconsolidation operations should not occur at the harbor front.
- Biosecurity measures – invasive species and food safety indicate that management of LCL must change – business as usual will be unacceptable; increased levels of recordkeeping will be required.
- Mechanisms for cost containment of agricultural goods for increased levels of self-sufficiency need to be identified. A compensatory rate structure for agricultural goods does not support the goal of self-sufficiency.

Recommendations:

- Changes in LCL cargo management indicate that a centralized facility for consolidation, deconsolidation and inspection may best serve the needs of Hawaii's agricultural industry and at the same time maximize the State's ability to increase its level of self-sufficiency. A public-private partnership operating a joint use facility incorporating all aforementioned activities may be in the best interests of the State.
- Tariff rates for transportation of agricultural goods should be reviewed. Full compensatory structures will require other subsidization mechanisms.
- While this document addresses agriculture's needs, the rest of the community must not be forgotten. LCL needs for the rest of Hawaii's small businesses are a serious concern as evidenced by the comments of the food manufacturers. Private consolidators may be encouraged to locate in close proximity to the agricultural facilities to provide opportunities to leverage volume capacities and reduce costs. A system wide approach to address LCL cargo should be reviewed as plans to implement solutions for agriculture are completed.

INTRODUCTION

Hawaii’s position as the most remote location on earth from any adjacent land mass and the non-contiguous characteristics of islands making up the State creates unique challenges not encountered in any of the other 49 states of the Union. Intrastate transportation options such as rail or truck are not available to Hawaii’s farmers and ranchers. Nearly 68% of Hawaii residents and visitors reside on Oahu, but Oahu accounts for only 5.4% of the total state farm land. The Big Island has 13.6% of the state’s total de facto population but its farm acreage is 12 times as big as that on Oahu. Young Brother’s former tagline as the “Lifeline of the Hawaiian Islands” can be taken literally as tariff structures of other ocean transporters do not include interisland transportation.

According to data from the State Department of Business, Economic Development and Tourism, nearly 68% of people in Hawaii on a typical day are on the island of Oahu. However, the majority of agricultural production is on the Big Island. The Big Island has the largest number of farms (59.1% of the state total) and the largest share of active farm and ranchland (63.1% of the state total). In 2005, total crop sales from Big Island farms were \$165.5 million, accounting for 34% of the total state crop sales. Approximately 37 % of the fruits and vegetables consumed in the State and 53% of the flowers and nursery products are produced on the Big Island.

Due to the disparity between population centers and agricultural production, transport of agricultural products between the islands is an important part of the economy.

Table 3. Hawaii Population, Farm Acreage, and Crop Sales by County: 2005

<i>County</i>	<i>De Facto Population</i>		<i>Farm acreage</i>		<i>Crop sales</i>	
	Number	% share	Value (1,000)	% share	Value (\$1,000)	% share
STATE	1,407,616		1,300		487,249	
Honolulu County	951,318	67.6	70	5.4	136,129	27.9
Hawaii County	191,733	13.6	820	63.1	165,465	34.0
Kauai County	80,683	5.7	150	11.5	47,172	9.7
Maui County	183,882	13.1	260	20.0	138,483	28.4

Note: De facto population = resident population + daily visitors – residents temporarily absent

Source: State Department of Business, Economic Development & Tourism, 2006 Data Book Tables 1.09, 19.05, and 19.06.

Shipping costs represent a significant part of the cost of living. As a measure of the cost of living, Table 4 presents the per diem allowances on food and other items (mostly food) for major U.S. cities. Food cost in Honolulu was the second highest among all U.S. cities, just \$1 less than Anchorage, Alaska, at \$92 per person per day. Both are located far from the continental U.S. and heavily rely on imported food. For this reason transportation costs are a major factor in the Hawaii’s cost of living.

Table 4. Comparison of Per Diem Allowances on Food and Others for Selected Cities

<i>City</i>	<i>Estimated food and other costs (\$/day)</i>
Anchorage	93
Honolulu	92
Chicago	64
San Francisco	64
New York City	64
Los Angeles	64
Seattle	39
Houston	59

Source: Economic Research Institute, the Geographic Reference Report

Hawaii’s food and agricultural products are mainly shipped from the U.S. mainland. According to the U.S. Army Corps of Engineers¹, Hawaii brought in a total of 1,835,000 tons of food and farm products from the U.S. mainland in 2005, and 73,000 tons from foreign countries. U.S. shippers for the overseas cargo are Matson Navigation Company and Horizon Lines.

Much of the agricultural and related products transported between islands are shipped in quantities that are “less than container load” (LCL). YB currently consolidates and deconsolidates such cargo at the harbors. LCL shippers bring their cargo in individual boxes or on pallets (such cargo is known as palletized or “less than container load” cargo or “LCL” cargo). In addition to raw agricultural products, many small farmers and entrepreneurs depend on LCL services for their materials and supplies. In addition to farmers and ranchers, many value added product entrepreneurs operate with Just-In-Time inventory, relying heavily on LCL. They do not have the financial ability or storage capacity to accommodate a large inventory of supplies.

Deaths resulting from consuming contaminated food have created a heightened level of food safety awareness. Retailers seek to find ways to reduce risks from the farm to the consumer. Third party certifications “guaranteeing” safe food handling practices have become commonplace in the market. While not regulatory, certification requirements often become the determining factor whether a farmer is able to sell his product. Transportation systems are a critical component within the farm-to-consumer supply chain.

Sheds that once protected goods at Kahului Harbor beneath their eaves during the consolidation and deconsolidation process have been torn down without providing alternate replacement protection. Food and nursery products now sit in the open at Kahului Harbor, exposed to sun and rain before being placed in refrigerated containers or being picked up by the consignee. Produce wholesalers say this reduces the shelf life and decreases the value of the Maui farmer’s goods. Shippers of nursery and foliage also expressed concern about the quality of product arriving to retail destinations on Maui.

¹ Hawaii State Department of Business, Economic Development & Tourism, 2006, The State of Hawaii Data Book, Table 18.55.

Many destructive insects and diseases have had major impacts in reducing Hawaii's farmers' and ranchers' productivity. Coupled with impacts on Hawaii by invasive species such as the coqui frog, they are a major concern for Hawaii.

OBJECTIVES OF THE STUDY

- Identify and document the current shipping practices and options through surveys;
- Determine cost, feasibility, advantages, and disadvantages of each;
- Determine present use of shipping options by diversified agriculture;
- Determine projected future use of shipping options by diversified agriculture;
- Determine feasibility and impact of various freight-consolidation options on diversified agriculture, including increased use and/or more efficient use of existing cold storage/consolidation facilities located off of harbor property;
- Compare shipping options for similar industries;
- Determine transportation infrastructure requirements to meet food safety and invasive species management requirements; and
- Evaluate and recommend feasible alternatives and itemize the steps necessary to implement such alternatives.

METHODOLOGY

A pilot survey was conducted by mail in June 2007. Survey questionnaires were sent to 1,026 agribusinesses on the Hawaii Farm Bureau Federation (HFBBF) list. The list was comprised of farmers, nursery owners and ranchers, inclusive of all agribusinesses who might ship in LCL loads. Forty agribusinesses responded to this survey with ten saying they were no longer active. A follow up telephone survey with revised questions was conducted during the months of August and September 2007. The sampling frame is the list of agribusinesses with their contact information provided by the Hawaii Farm Bureau Federation as well as farms, ranches and nurseries identified through Internet, telephone directory, newspaper and periodical searches. There were 1,225 agribusinesses and agribusiness owners identified with phone numbers. Of these records, 249 agribusinesses responded but were not qualified to do the survey because they did no shipping. 771 agribusiness owners or managers did not respond to the survey. The reasons for non-response were: disconnected phone numbers, people on the list who turned out not to run agribusinesses, deceased agribusiness owners, wrong numbers, answering machines, retired agribusiness owners, people who had filled out the previous mail survey, and duplicate phone numbers, according to the phone survey company, FAQ Hawaii. It was estimated that 25% of the farms listed were not active. 205 telephone surveys were completed as of September 21, 2007. Farmers were not asked to provide detailed financial analysis of their operations. They were asked how they believed a proposed discontinuation of LCL loads would affect them. The data were processed using SPSS version 15.0. No weighting was applied to the sample data when calculating the percentage figures. The total number of farms with 10 acres of land or more in Hawaii based on US Department of Agriculture data was used in deriving the total freight values. The maximum margin of error is calculated to be 6.1%.

Although there are 5,500 farms registered in the state, the Hawaii Department of Agriculture estimates that only 500 farms in all of Hawaii generate \$100,000 or more in revenues per year.³ According to the Census of Agriculture (U.S. Department of Agriculture, 2002 Census), 56.3% of Hawaii farmers had sales less than \$10,000 in 2002 and only 1,958 farms in the State are made up of 10 acres or above. It is probable that the 205 agribusinesses that completed the surveys are likely to represent the top earning farms, ranches and nurseries in the State.

In addition, a survey of a similar industry’s sensitivity towards ocean transportation was conducted. A list of 84 records of names and phone numbers of food manufacturers was obtained from the Hawaii Food Manufacturers Association. From the 84 records, 38 surveys were completed with food manufacturers who shipped their products, 7 said they did not ship and 39 refused to participate or were unavailable. The 38 surveys were completed on September 21, 2007.

Table 5 presents the distribution of agricultural enterprises by type of business and by county. Agribusinesses (farms) which produce, foliage or other nursery products accounted for 36.1% of the completed sample, followed by farms that couldn’t specify their main products at 20.5%, vegetable producers at 14.6%, flower farms at 10.7%. Other farms comprise the remaining 18.1% of the sample.

In addition to the telephone surveys, follow up questions were asked by numerous telephone calls and e-mails. Follow up field visits were made to Honolulu, Kahului, Kawaihae and Hilo harbors to see how agricultural goods are loaded and unloaded. Efforts were made to speak to farmers and agricultural marketing cooperative members in Kamuela and Wailuku.

Numbers for outgoing and incoming shipments on ocean and air transportation were derived mathematically from numbers available from the survey and the U.S. Department of Agriculture (See Appendix D for details).

Table 5. Farm Distribution in Agricultural Transportation Survey
(% of total sample)

<i>Type of business</i>	<i>Honolulu County</i>	<i>Maui County</i>	<i>Hawaii County</i>	<i>Kauai County</i>	<i>TOTAL</i>
Vegetables	1.5	3.4	8.3	1.5	14.6
Flowers	0.5	6.3	3.4	0.5	10.7
Foliage or Nursery Products	7.3	9.8	11.7	7.3	36.1
Fruits	0.0	1.5	2.9	0.5	4.9
Nuts	0.0	0.0	1.0	0.5	1.5
Coffee	0.0	1.0	6.3	0.5	7.8
Livestock	0.5	0.0	2.0	1.5	3.9
Other	3.4	2.9	11.7	2.4	20.5
TOTAL	13.2	24.9	47.3	14.6	100.0

² Loke, Hawaii Department of Agriculture

47.3% of the samples were drawn from the Big Island, 24.9 from Maui County that includes the islands of Maui, Molokai and Lanai, 14.6% from Kauai, and 13.2% from Oahu. Sample distribution is similar to the farm distribution among the islands (59.1% on Big Island, 15.5% in Maui County, 14.5% on Oahu, and 10.9% on Kauai).

RESULTS

CURRENT SHIPPING PRACTICES AND OPTIONS

1. Agribusiness Shipping Activity

22.4% of the agricultural entities (farms) surveyed used shipping service for their products but did not use shipping service for their supplies or materials (Table 6). 43.4% of the farms used shipping service for their supplies but sold their products locally. 34.1% of the farms used shipping services both for their out-going products and in-coming supplies. Over half of the flower growers and nursery products producers sold their products locally. 56.5% (22.4% out +34.1% both in and out) of the farms ship out their products to the neighbor islands.

Table 6. Shipping Activities by Farm Type: 2006
(% of farms)

<i>Type of business</i>	<i>Products going out</i>	<i>Supplies shipping in</i>	<i>Both IN and OUT</i>	<i>TOTAL</i>
Vegetables	46.7	26.7	26.7	100.0
Flowers	13.6	68.2	18.2	100.0
Foliage or Nursery Products	18.9	51.4	29.7	100.0
Fruits	20.0	0.0	80.0	100.0
Nuts	33.3	33.3	33.3	100.0
Coffee	18.8	18.8	62.5	100.0
Livestock	37.5	12.5	50.0	100.0
Other	14.3	54.8	31.0	100.0
TOTAL	22.4	43.4	34.1	100.0

Table 7. Mode of Shipping (Out-going and In-coming) by Farm Type: 2006
(% of farms)

<i>Type of business</i>	<i>Over the ocean only</i>	<i>Both air and ocean</i>	<i>Air only</i>	<i>% of ocean</i>
Vegetables	13.3	86.7	0.0	100.0
Flowers	0.0	100.0	0.0	100.0
Foliage or Nursery Products	6.8	93.2	0.0	100.0
Fruits	40.0	60.0	0.0	100.0
Nuts	0.0	100.0	0.0	100.0
Coffee	18.8	81.3	0.0	100.0
Livestock	25.0	75.0	0.0	100.0
Other	11.9	88.1	0.0	100.0
TOTAL	11.2	88.8	0.0	100.0

Table 7 shows that none of the farms used only air transportation for both their out-going products and in-coming supplies. This indicates that all the farms surveyed (100%) used water transportation in 2006.

Table 8. Mode of Shipping-Out by Farm Type: 2006
(% of total sample by farm type)

<i>Type of business</i>	<i>By air only</i>	<i>By ocean only</i>	<i>Both air and ocean</i>	<i>TOTAL</i>
Vegetables	36.4	31.8	31.8	100
Flowers	85.7	0.0	14.3	100
Foliage or Nursery Products	8.3	41.7	50.0	100
Fruits	10.0	50.0	40.0	100
Nuts	0.0	100.0	0.0	100
Coffee	15.4	30.8	53.8	100
Livestock	0.0	57.1	42.9	100
Other	10.5	52.6	36.8	100
TOTAL	19.0	40.5	40.5	100

Table 8 shows that most of the flower farmers use air to ship out their products to the neighbor island due to freshness requirements. Nut farmers, however, use only ocean transportation for shipping out their products.

2. Total Demand for Interisland Shipping

Out-going shipment of agricultural products

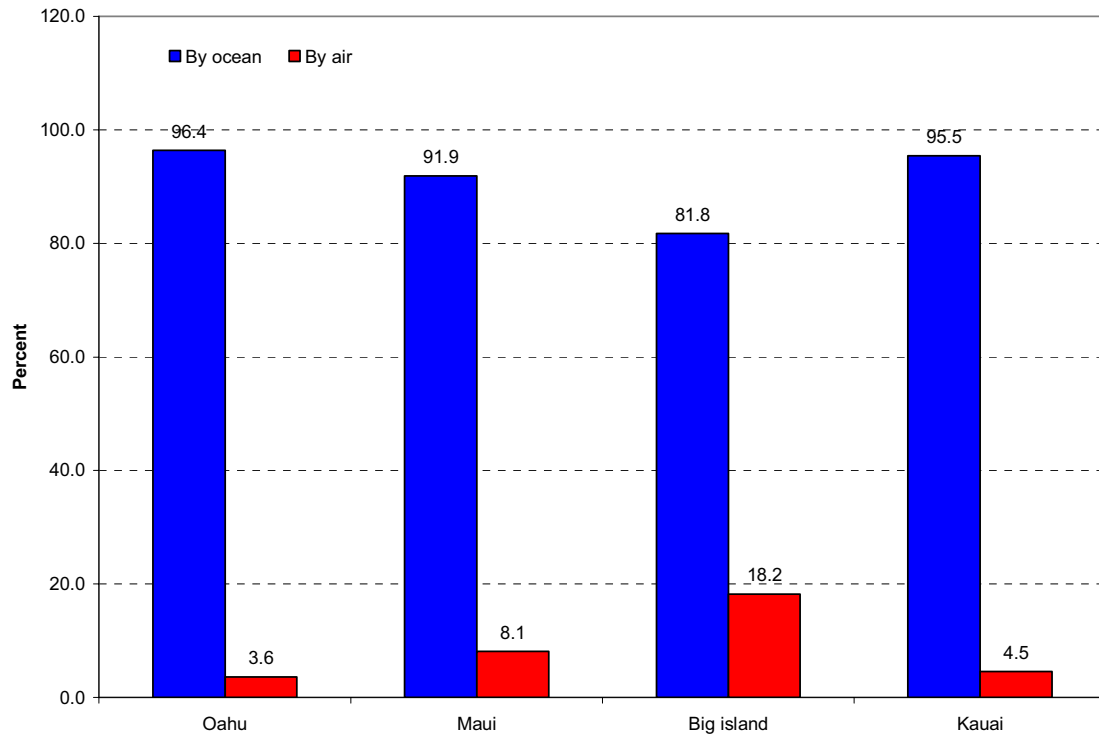
Total out-going shipping demand for fresh agricultural products in Hawaii (not including shipment of supplies and materials) is estimated to be 147,161 U.S. tons in 2006, of which 82.8% or 121,850 tons were shipped by ocean (Table 9).

Most of the air shipping was from the Big Island which accounted for 97.4% of the air cargo. As shown in Figure 1, 18.2% of the Big Island's fresh agricultural products were shipped by air in 2006. Almost all the nursery products were shipped by air due to the freshness requirement.

Table 9. Total Out-going Shipment of Agricultural Products by County: 2006
(Tons)

<i>County</i>	<i>By Ocean</i>	<i>By Air</i>	<i>Total</i>	<i>% of ocean</i>
Oahu	6,361	238	6,600	96.4
Maui	4,403	390	4,793	91.9
Big island	110,489	24,654	135,143	81.8
Kauai	597	28	625	95.5
Total	121,850	25,311	147,161	82.8
% of Total shipping	82.8	17.2	100.0	82.8

Figure 1. Out-going Shipment of Agricultural Products by County: 2006



In-coming shipment of supplies and materials

As presented in Table 10, in-coming shipment of supplies and materials is estimated to be 22,560 tons in 2006, of which 67.3% were shipped in by ocean. Due to the large number of farms on the Big Island, 40.7% of the in-coming shipments (22,560 tons) were received by the Big Island, which ranked first.

Table 10. In-coming Shipment of Supplies and Materials by Mode of Shipping: 2006 (Tons)

<i>County</i>	<i>Ocean freight</i>	<i>Air freight</i>	<i>Total</i>	<i>% of ocean freight</i>
Honolulu	905	913	1,818	49.8
Maui	4,063	2,000	6,063	67.0
Hawaii	6,049	3,143	9,191	65.8
Kauai	4,169	1,319	5,487	76.0
Total	15,185	7,375	22,560	67.3

3. Demand for Interisland Ocean Transport

Based on the survey conducted for this study, total interisland ocean freight of fresh agricultural products is estimated to be 121,850 tons, 73.0% of which was shipped on skips or pallets. Of the total ocean freight of 597 tons from Kauai, 80.0% of them were shipped on skips or pallets.

74.0% of the Big Island's shipment was on skips or pallets, 65.0% of Maui's and 60.0% of Oahu's shipment were going out on skips or pallets in 2006.

Figure 2. Inter-Island Ocean Freight of Agricultural Products and Supplies by County: 2006

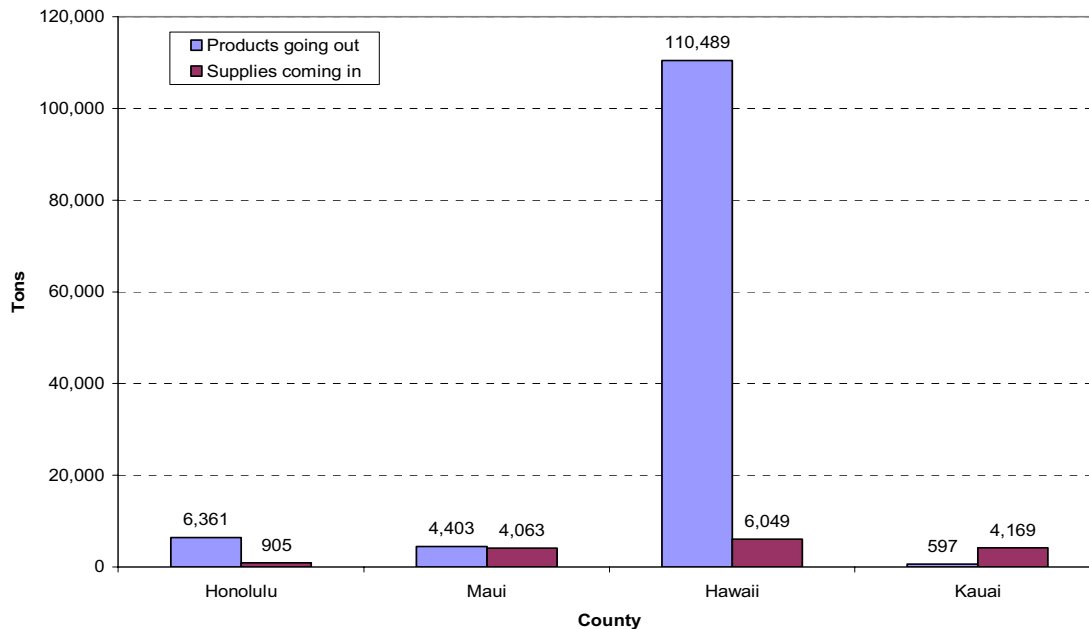


Table 11. Container Status of Out-going Ocean Freight by County: 2006
(Tons)

<i>County</i>	<i>Total tonnage</i>	<i>LCL</i>	<i>Full containers</i>	<i>% LCL</i>
Honolulu	6,361	3,817	2,544	60.0%
Maui	4,403	2,862	1,541	65.0%
Hawaii	110,489	81,762	28,727	74.0%
Kauai	597	477	119	80.0%
Total	121,850	88,918	32,932	73.0%

Table 12. LCL Usage for Out-going Ocean Freight: 2006
(% of farms that shipped out)

Type of farm	Used LCL	Did not use LCL	Total
Vegetables	76.9	23.1	100.0
Foliage or Nursery Products	92.9	7.1	100.0
Nuts	100.0	0.0	100.0
Coffee	100.0	0.0	100.0
Livestock	66.7	33.3	100.0

Figure 3. Out-going Agricultural Product Ocean Freight by LCL Status: 2006

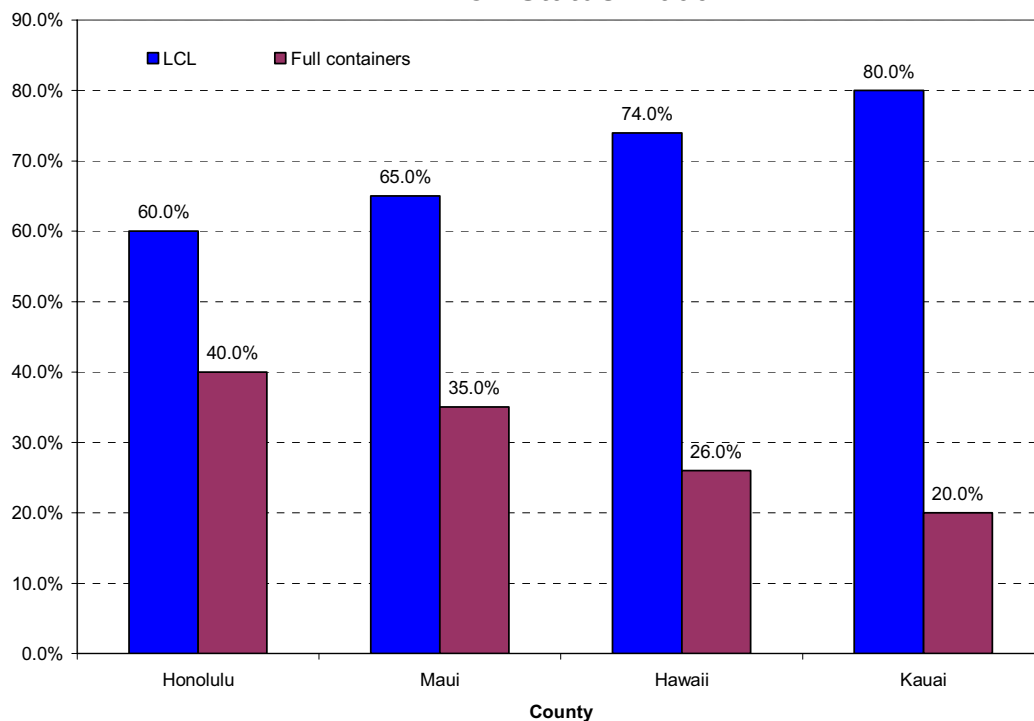
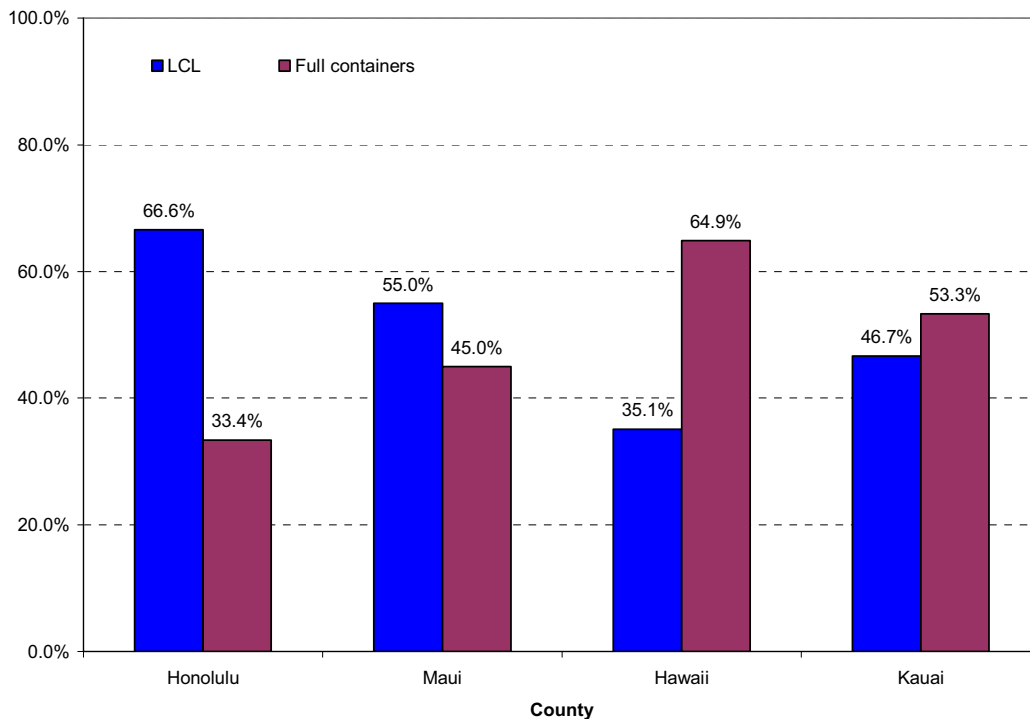


Table 13. LCL Usage for In-coming Ocean Freight by County: 2006
(Tons)

<i>County</i>	<i>Total tonnage</i>	<i>LCL</i>	<i>Full containers</i>	<i>% LCL</i>
Honolulu	905	603	302	66.6
Maui	4,063	2,235	1,828	55.0
Hawaii	6,049	2,123	3,926	35.1
Kauai	4,169	1,947	2,221	46.7
Total	15,185	6,908	8,277	45.5

Figure 4. In-coming Supplies and Materials Ocean Freight by LCL Status: 2006



Other findings from the survey include:

- 100% of the farmers, nursery owners and ranchers surveyed use water transportation for either shipping out their products or shipping in materials and supplies.
- 90.4% of those who use ocean transportation said that cost is the most important factor for them to use ocean transportation (Table 18).
- 68.1% of the farmers shipped out their products, always or fairly often use LCL (Table 14).
- 81.3% of the farmers shipped in their supplies and materials always or fairly often use LCL (Table 14).
- 14.9% of the farmers shipped out their products only in full containers. 6.5% of the farmers shipped in their supplies only in full containers (Table 14).

Table 14. Frequency of Using LCL Ocean Freight
(% of farms)

Frequency	Shipping out products	Shipping in supplies
Always or almost always	53.2	65.2
Fairly often	14.9	16.1
Sometimes	10.6	6.5
Just occasionally	5.3	4.5
Never or almost never	14.9	6.5
No answer	1.1	1.3
Total	100.0	100.0

COST, FEASIBILITY, ADVANTAGES, AND DISADVANTAGES OF SHIPPING OPTIONS

1. Cost of Shipping and Impact on Production

According to Young Brothers Limited, the shipping cost for refrigerated products in less than container load (LCL) was about \$65 per ton and for dried products about \$27 per 20 cubic feet before October 2007. These costs do not include additional service fees charged by freight-forwarders. The rates were increased by 15%, effective October 22, 2007.

80.0% of the farmers have concerns on consolidating their products with others for shipping in full containers. The largest concern was the live pests from somebody else's shipment, 72.5% of the farmers expressed worries on this. (Table 16)

Table 15. Farmers' Concerns on Cargo Consolidation
(% of farms)

Type of concern	Has concerns	No concerns	No idea	Total
Contamination from somebody else's shipment	62.5	35.0	2.5	100.0
Live pests from somebody's shipment	72.5	27.5	0.0	100.0
Contamination from the container	48.8	46.3	5.0	100.0
Contamination from handling	33.8	62.5	3.8	100.0
Has at least one concern above	80.0	20.0	0.0	100.0

If the shipping cost increased by 10%, 37.3% of the farmers said they will not be able to afford shipping. If the shipping cost increased by 20%, 56.5% of the farmers said they will not be able to afford shipping.

Table 16. Shipping Affordability and Cost Increases

% of cost increase from current rate	% of farms that cannot afford at this rate increase
0 - 10%	37.3
10 - 20%	19.2
20 - 30%	10.2
30 - 40%	2.8
40 - 50%	4.0
Unsure	26.6
Total	100.0

Table 17. Impact on Farm Operations if YB Discontinues LCL Shipping

Degree of impact	% of farms impacted
Little or none	9.6
Acceptable	12.4
Serious, but could stay in business	63.3
Probably out of business	13.0
Unsure	1.7
TOTAL	100.0

If Young Brothers discontinues LCL shipping, more than 76% of the farm businesses will be seriously affected negatively. 13% of the businesses said they may be out of business.

2. Advantages and Disadvantages of Ocean and Air Transportation

Table 18. Advantages of Ocean Transportation for Shipping-out Products

(% of farms that use water transportation by business type)

<i>Type of business</i>	Lower cost	Food safety	Arrives in downtown HNL instead of airport	Other	No answer	Total
Vegetables	92.9	0.0	0.0	0.0	7.1	100.0
Flowers	100.0	0.0	0.0	0.0	0.0	100.0
Foliage or Nursery Products	93.9	0.0	0.0	6.1	0.0	100.0
Fruits	88.9	0.0	11.1	0.0	0.0	100.0
Nuts	100.0	0.0	0.0	0.0	0.0	100.0
Coffee	81.8	0.0	0.0	18.2	0.0	100.0
Livestock	71.4	0.0	0.0	28.6	0.0	100.0
Other	94.1	0.0	0.0	5.9	0.0	100.0
TOTAL	90.4	0.0	1.1	7.4	1.1	100.0

Table 19. Advantages of Air Transportation for Shipping-out Products
(% of farms that use air transportation by business type)

<i>Type of business</i>	Protect freshness of products	Food safety	Protection from elements	Greater control due to less handling	No answer	Total
Vegetables	92.9	0.0	0.0	0.0	7.1	100.0
Flowers	85.7	0.0	0.0	0.0	14.3	100.0
Foliage or Nursery Products	31.6	0.0	5.3	10.5	52.6	100.0
Fruits	60.0	0.0	0.0	20.0	20.0	100.0
Nuts	NA	NA	NA	NA	NA	NA
Coffee	55.6	0.0	0.0	22.2	22.2	100.0
Livestock	100.0	0.0	0.0	0.0	0.0	100.0
Other	44.4	11.1	0.0	0.0	44.4	100.0
TOTAL	60.0	1.5	1.5	7.7	29.2	100.0

Table 20. Advantages of Air Transportation for Shipping-in Supplies
(% of farms that use air transportation by business type)

<i>Type of business</i>	Protect freshness of products	Food safety	Protection from elements	Greater control due to less handling	No answer	Total
Vegetables	33.3	0.0	0.0	0.0	66.7	100.0
Flowers	77.8	0.0	0.0	0.0	22.2	100.0
Foliage or Nursery Products	33.3	0.0	8.3	8.3	50.0	100.0
Fruits	50.0	0.0	0.0	0.0	50.0	100.0
Nuts	0.0	0.0	0.0	50.0	50.0	100.0
Coffee	44.4	0.0	0.0	22.2	33.3	100.0
Livestock	NA	NA	NA	NA	NA	NA
Other	25.0	8.3	8.3	16.7	41.7	100.0
TOTAL	39.3	1.6	4.9	11.5	42.6	100.0

Shipments in small lot volumes occur for two reasons. First, the majority of farms in Hawaii are small. They do not produce enough volume to fill a container. Second, many businesses purchasing agricultural products are small. Many operate with Just-in-Time inventories with no

storage area for excess volume. Also, the perishability of agricultural goods does not encourage long term storage practices.

COMPARATIVE SHIPPING OPTIONS FOR SIMILAR INDUSTRIES

Shipping Options for Food Manufacturers

Other industries that ship goods back and forth to the Neighbor Islands in less than container loads include food manufacturers. It was possible only to take a small sample of food manufacturers. Food manufacturers also worry about spoilage, refrigeration and the need for areas to drop off and pick up cargo. Many of the food manufacturers are accustomed to shipping goods in less than container load amounts. They also need the storage sheds to protect their goods at the docks.

Survey of food manufacturers reveals the following shipping practices (Appendix B):

- None of the food manufacturers ship their product by air only (while 19% of farmers ship out their products by air only).
- 100% of the food manufacturers use water transportation for either shipping out their products or bringing in supplies (same as farmers).
- 97% of the food manufacturers said the single greatest reason for shipping out by water is low cost (versus 90.4% for farmers)
- 94% of the food manufacturers use skips or pallets to ship out their products (versus 85% for farmers)
- 74% of the food manufacturers always or fairly often use skips or pallets (versus 68.1% for farmers)
- Due to the larger percentage of food manufacturers that use skips or pallets to ship out their products, they are more sensitive to the increase in shipping costs. If the shipping costs increase by 10%, 57% of the food manufacturers believe they will not be able to afford shipping (versus 37.3% for farmers). If shipping costs increase by 20%, 79% of the manufacturers believe they will not be able to afford shipping (versus 56.5% for farmers).
- If Young Brothers was discontinued shipping on skips or pallets, 73% of the businesses believe they will be seriously affected (63.3% for farmers), and 8% of them said they may be forced to go out of business (versus 13% for farmers).

The options for the food manufacturers are the same as the farmers and perhaps it would be possible for the two groups to join together in looking at the development of covered sheds in DOT harbor areas that are contiguous to Young Brothers yards.

FUTURE TRANSPORTATION INFRASTRUCTURE REQUIREMENTS

1. Other Issues

An important LCL service user that was not covered within the survey is the fertilizer and pesticide vendor. Many vendors operate with stores on several islands. Based on each islands' purchase characteristics, inventories for fertilizers and pesticides are maintained at the site of

heaviest usage. LCL services are used to trans-ship material as needed to other stores. Farmers ordering fertilizer or pesticides, not available on site, are able to receive deliveries in a reasonable amount of time due to LCL service. Cargo of this nature needs to be addressed. Fertilizers and pesticides should not be comingled with other cargo. Yet, the ability to ship small volumes at reasonable cost is critical to contain input costs and maintain farmer and rancher viability.

2. Food Safety and Invasive Species Issues

The Hawaii Department of Agriculture, Plant Quarantine Branch, has the regulatory authority and mandate to protect Hawaii from invasive species as well as prevent their spread through export. As part of a strategic initiative to address this matter, the Hawaii Department of Agriculture, Plant Quarantine Branch, has developed a Biosecurity Program. Components of this program address the requirements needed while handling LCL cargo to protect not only Hawaii's agriculture from invasive species but its environment.

The Biosecurity plan also includes provisions to provide safe food to our consumers. Third party certification protocols seek to address this topic area. Attached is an example of the Primus checklist to ensure that measures to facilitate safe food product handling is implemented (See attachment E)

The HDOA Biosecurity measures require increased levels of inspection, challenging the current inspection capacity of the Department and past practices by cargo carriers. Recordkeeping methods will be important. Manifests can facilitate targeted inspections of high risk commodities, increasing efficiency of cargo flow. Empty shipping containers should also be routinely inspected for residual live invasive species. Records of past use of the container will be critical for food safety certification requirements. These requirements will mean significant changes in traditional LCL handling methods.

OBJECTIVES FOUND TO BE BEYOND THE SCOPE OF THIS REPORT

The following assigned objectives were found to be beyond the scope of this report. While many opinions were provided, verifiable objective data was not secured within the timeframe of this project.

- Determine projected future use of shipping options by diversified agriculture; and
- Determine feasibility and impact of various freight-consolidation options.

CONCLUSIONS

“In conclusion, as Hawaii is a state made up of various islands, interisland shipping is the lifeline for moving products, specifically locally grown agricultural products. This report provides quantitative data on intrastate agricultural cargo and the economic impact it has on Hawaii's agricultural production. It also provides the basic challenges and opportunities of our surface transportation system.”

A survey was conducted of various farmers, manufacturers, and users of YB, the only interisland surface carrier in the state, to gather objective data that can be used in decision-making. The majority of LCL users have expressed their concern of not being able to afford shipping their products if rates continue to escalate. Farmers also expressed concern that they will be negatively impacted and forced out of business if LCL were to be discontinued. Food manufacturers surveyed viewed LCL as the most economical method of shipping and felt that they would also be negatively impacted if LCL services were discontinued.

This report was not written to negatively investigate any individual operation, but to raise the issue of the importance of interisland shipping as it impacts Hawaii agricultural production and the need to find solutions and alternatives in improving our surface transportation system. This report provides the necessary basic data to begin planning to implement measures to address the concerns that have been raised by the farmers and ranchers. Some key points that should be noted as we move forward include:

- LCL cargo is needed for intrastate movement of goods;
- Agricultural LCL cargo includes not only fresh agricultural products but value added goods using locally grown agricultural products, materials, and supplies, including fertilizers and pesticides.
- Harbor front real estate is at a premium. Ongoing congestion issues suggest that consolidation/deconsolidation operations should not occur at the harbor front.
- Biosecurity measures – invasive species and food safety indicate that management of LCL must change – business as usual will be unacceptable; increased levels of recordkeeping will be required.
- Mechanisms for cost containment of agricultural goods for increased levels of self-sufficiency need to be identified. A compensatory rate structure for agricultural goods does not support the goal of self-sufficiency.

RECOMMENDATIONS

- Changes in LCL cargo management indicate that a centralized facility for consolidation, deconsolidation and inspection may best serve the needs of Hawaii's agricultural industry and at the same time maximize the State's ability to increase its level of self-sufficiency. A public-private partnership operating a joint use facility incorporating all aforementioned activities may be in the best interests of the State.
- Tariff rates for transportation of agricultural goods should be reviewed. Full compensatory structures will require other subsidization mechanisms.
- While this document addresses agriculture's needs, the rest of the community must not be forgotten. LCL needs for the rest of Hawaii's small businesses are a serious concern as evidenced by the comments of the food manufacturers. Private consolidators may be encouraged to locate in close proximity to the agricultural facilities to provide opportunities to leverage volume capacities and reduce costs. A system wide approach to address LCL cargo should be reviewed as plans to implement solutions for agriculture are completed.