

# Tourism Contribution to Hawai'i Agriculture Industry



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## Introduction

Developing and promoting Hawai'i's agriculture industry has long been the duties and activities of the State Department of Agriculture (DOA, Chapter 141, HRS) and the Department of Business, Economic Development & Tourism (DBEDT, Chapter 201, HRS). In 2016 at the International Union for Conservation of Nature World Conservation Congress, Governor David Ige pledged to double food production in Hawai'i by 2030 as part of Hawai'i's commitment to the world.

Act 151, Session Laws of Hawai'i 2019 directs the State Department of Agriculture to develop a strategic plan to double local food production and increase food exports by 2030. Act 176, Session Laws of Hawai'i 2021 requires state departments to ensure a percentage of the produce they purchase is locally grown with the goals of 10% of the total produce they purchase consists of "fresh local agricultural products and local value-added, processed, agricultural, or food products" by January 1, 2025. That percentage increases by 8 percentage points every five years until it's up to 50% by 2050. The act defines the local products to include fruits, vegetables, nuts, coffee, eggs, poultry, and poultry products, livestock, and livestock products, milk and milk products, aquacultural, and maricultural products, and horticultural products, all 100% grown, raised, and harvested in Hawai'i.

Over the years, DBEDT, DOA and local farmers/ranchers, food processors/manufacturers, agricultural trade organizations, and investors organized various campaigns to promote local food products, such as the "Buy Local, It Matters," "Island Fresh" "Buy Hawai'i, Give Aloha" and the "Made in Hawai'i" and the Hawaii Seals of Quality portal websites that list the local food producers with business and products descriptions.

In 2021, the Hawai'i Tourism Authority (HTA) developed its Destination Management Action Plans (DMAPs) for each island. A major part of the DMAP calls for Hawai'i's visitor industry businesses to buy value-added and processed agricultural products from Hawai'i's farmers and ranchers.

This report estimates the contributions of the tourism industry to the Hawai'i agriculture industry in terms of percentage of the industry's sales purchased by visitors in Hawai'i directly, indirectly, and induced. The estimate is for 2019, the year before the COVID-19 pandemic started. The estimated results may provide a starting point for HTA for its promotion on and encouragement to buy local agricultural products and provide a methodology for future assessment. The same methodology can be applied to other industries.

## Definition and Methodology

For the purposes of this report, tourism is measured by visitor expenditures on fresh agricultural products and processed food. Visitor expenditures include visitors personal spending, airline spending on fuel and supplies, cruise line spending on fuel and supplies, and supplemental business spending for visitors in Hawai'i for business and conventions. All measures in this report are in nominal terms without adjusting for inflation.

The estimate starts with the 2017 Hawai'i State Input-Output (I-O) Model and the County Input-Output Model<sup>1</sup>. The agriculture industry in this study includes two subsectors: (1) Agriculture products which includes fruits, vegetables, nuts, coffee, eggs, poultry, and poultry products, livestock, and livestock products, milk and milk products, aquacultural, and maricultural products, and horticultural products. Supporting activities such as farm labor management and business management are also included. (2) Food processing and manufacturing which includes bakeries, coffee mills, macadamia nuts processing, meat preparation, and seafood preparation.

Sales value is measured by farm-gate value or food processor's value before wholesale and/or retail.

The agriculture industry grouping is based on North American Industry Classification System (NAICS). The largest NAICS category for annual sales in 2017 was food processing at \$1.6 billion, followed by crop production at \$457 million, animal production at \$155 million, supporting activities for agriculture was at \$123 million, commercial fishing at \$116 million. Forestry and Logging is not in the definition of Act 176, SLH, 2021, but the value was only \$10 million (0.4% of the total), and it was grouped into the agriculture industry in the I-O models. The estimates in this report include this subindustry.

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<sup>1</sup> DBEDT, 2017 State Input-Output Study and 2017 Hawaii Inter-County Input-Output Study.  
[http://dbedt.hawaii.gov/economic/reports\\_studies/2017-io/](http://dbedt.hawaii.gov/economic/reports_studies/2017-io/);  
[http://dbedt.hawaii.gov/economic/reports\\_studies/2017-inter-county-io/](http://dbedt.hawaii.gov/economic/reports_studies/2017-inter-county-io/)

**Table 1. Hawai'i Agriculture Industry Sector Component**

Industry	NAICS	2017 Sales (\$M)	% Total
<b>Agriculture Products</b>			
Crop production	111	456.8	18.9
Animal production	112	154.9	6.4
Commercial fishing	114	116.4	4.8
Forestry and logging	113	9.8	0.4
Support activities for agriculture	115	123.5	5.1
<b>Food processing</b>	311	1,551.8	64.3
<b>Total</b>		2,413.2	100.0

Source: DBEDT, 2017 State of Hawai'i Input-Output Model

The core of the I-O model is the transaction table that depicts a comprehensive and detailed set of accounts of sales and purchases of goods and services among the producing industries, final consumers (households, visitors, exports, and government), and resource owners (labor, capital, and land) during a particular year. In other words, the I-O table shows all the linkages between industries, between industries and the final users. For example, the transaction of a visitor purchasing a meal at a local restaurant is supported by the food supply chain, labor, and related over-head expenses. In order to produce the meal, the restaurant purchases local and imported produce, meats, and ingredients from wholesalers or retailers and hires local workers. Furthermore, the restaurant purchases electricity generated by Hawaiian Electric, water from Honolulu Board of Water Supply, internet services from Hawaiian Tel, pays rents to the local landlord, and utilizes local professional services such as accounting, management, and legal services. All these relations are presented in the I-O table so that the purchase by the visitor can be traced all the way to the beginning and from all parties in the economy, thus the impact of the purchase can be estimated.

Tourism's contribution to Hawai'i agriculture is estimated at three levels: (1) direct visitor spending; (2) direct and indirect visitor spending; and (3) direct, indirect, and induced visitor spending.

Direct visitor spending on agriculture is the value that can be attributed directly to agriculture products and processed food at the farm gates or producer's value when visitors purchase groceries and processed food. In the HTA's 2019 Annual Visitor Research Report<sup>2</sup>, Table 69 presents visitor personal spending by category. Of those categories: groceries and snacks, and Hawai'i food products are the two categories that the value of farm gate or producer's values are estimated, and those values are the direct visitor spending. When a visitor purchases a pound of Hawaii grown lettuce in a department store, the visitor pays the retail price which includes the transportation cost,

<sup>2</sup> Hawaii Tourism Authority, 2019 Annual Visitor Research Report. <https://files.hawaii.gov/dbedt/visitor/visitor-research/2019-annual-visitor.pdf>

storage cost, store mark up, and government taxes. Only a portion of the visitor payment is allocated to the farm gate.

Indirect spending includes visitor spending in other industries and the other industries need to make purchases of agriculture products or processed food in order to fulfill the sales. Restaurant food, dinner shows and cruises are the major categories in the visitor expenditure table (Table 69 of the 2019 Annual Visitor Research Report) that visitors have indirect spending on agriculture products. Induced visitor spending on agriculture is the spending by the workers who work directly in the tourism industry or work in industries supporting the tourism industry. These workers get paid from income derived from the direct and indirect visitor spending. Table 2 summarizes the tourism contribution to Hawai'i agriculture at different level of inclusions.

Table 2. Visitor Spending on Hawai'i Agriculture Industry

Direct spending	Visitor direct spending on groceries and food products, valued at farm gate or producer value before wholesale/retail margin and store mark up
Indirect spending	Sales of agriculture products and processed food to other industries that serve visitors
Induced spending	Sales of agriculture products and processed food to workers who work directly or indirectly with visitors

For comparison among industries and among the final demand sectors such as household spending, government spending, and exports, the direct plus indirect contributions should be used. For assessing the immediate impact of closing the entire tourism industry, the direct, indirect, and induced contributions (total impact) should be used.

## Results

Due to the interisland flows (trade between islands) of the products, visitors on one island may consume the products produced on the other islands. As shown in Table 3, visitors spent a total of \$27.9 million in 2019 on agriculture products and \$69.8 million processed food. \$14.8 million (53.1%) of the agriculture products consumed by visitors were produced on the Big Island, \$8.6 million (30.9%) were produced in on O'ahu, \$2.7 million (9.5%) were produced in Maui County, and \$1.8 million (6.5%) were produced in Kaua'i County

**Table 3. Visitor Direct Spending on Agriculture Industry by Producing County (2019)**

Producing County	(1) Agricultural products		(2) Processed foods		(1)+(2) Total Agriculture Industry	
	Spending (\$M)	County share (%)	Spending (\$M)	County share (%)	Spending (\$M)	County share (%)
Hawai'i County	14.8	53.1	26.8	38.4	41.6	42.6
Honolulu County	8.6	30.9	38.2	54.7	46.8	47.9
Kaua'i County	1.8	6.5	1.5	2.2	3.3	3.4
Maui County	2.7	9.5	3.3	4.7	5.9	6.1
State Total	27.9	100.0	69.8	100.0	97.7	100.0

\$38.2 million (54.7%) of the processed food consumed by visitors were produced on O'ahu. \$26.8 million (38.4%) were produced on the Big Island, \$3.3 million (4.7%) were produced in Maui County, and \$1.5 million (2.2%) were produced in Kaua'i County.

Hawai'i County and Honolulu County together accounted for 84 percent of the agriculture products consumed by visitors on various islands. For processed food, Hawai'i County and Honolulu County contributed 93.1 percent of the processed food consumed by visitors on the islands. For the agriculture industry as a whole 90.5 percent of the products consumed by visitors were produced in Honolulu and Hawai'i counties.

**Table 4. 2019 Tourism Contribution to Hawai'i Agriculture Industry**

Producing County	<b>(1) Agricultural Products (\$mil.)</b>						
	Output (\$m)	Visitor direct spending (\$m)	Visitor direct and indirect spending (\$m) 1/	Visitor direct, indirect, and induced spending (\$m) 2/	Tourism direct contribution (%)	Tourism direct and indirect contribution (%)	Tourism direct, indirect, and induced contribution (%)
Hawai'i County	403.4	14.8	36.2	57.9	3.7	9.0	14.4
Honolulu County	253.1	8.6	21.8	36.4	3.4	8.6	14.4
Kaua'i County	116.5	1.8	7.7	16.1	1.5	6.6	13.8
Maui County	152.6	2.7	6.7	20.1	1.8	4.4	13.2
State total	925.6	27.9	72.4	130.5	3.0	7.8	14.1
Producing County	<b>(2) Processed Food (\$mil.)</b>						
	Output (\$m)	Visitor direct spending (\$m)	Visitor direct and indirect spending (\$m)	Visitor direct, indirect, and induced spending (\$m)	Tourism direct contribution (%)	Tourism direct and indirect contribution (%)	Tourism direct, indirect, and induced contribution (%)
Hawai'i County	293.5	26.8	47.9	55.5	9.1	16.3	18.9
Honolulu County	1,194.3	38.2	106.0	188.7	3.2	8.9	15.8
Kaua'i County	45.6	1.5	5.2	8.0	3.3	11.4	17.5
Maui County	94.4	3.3	8.4	16.4	3.5	8.9	17.4
State total	1,627.7	69.8	168.3	268.6	4.3	10.3	16.5
Producing County	<b>(1) + (2) Total Agriculture Industry (\$mil.)</b>						
	Output (\$m)	Visitor direct spending (\$m)	Visitor direct and indirect spending (\$m)	Visitor direct, indirect, and induced spending (\$m)	Tourism direct contribution (%)	Tourism direct and indirect contribution (%)	Tourism direct, indirect, and induced contribution (%)
Hawai'i County	696.9	41.6	84.1	113.4	6.0	12.1	16.3
Honolulu County	1,447.4	46.8	127.8	225.1	3.2	8.8	15.6
Kaua'i County	162.1	3.3	15.4	24.1	2.0	9.5	14.9
Maui County	247.0	6.0	13.4	36.5	2.4	5.4	14.8
State total	2,553.3	97.7	240.7	399.1	3.8	9.4	15.6

Source: DBEDT/READ Estimates

As presented in Table 4, the visitor industry contributed 3.7 percent directly to the Big Island's total agriculture production at the farm gate value, that contribution increased to 9.0 percent if indirect sales were included. Including the purchases by workers in the tourism industry and those working in supporting industries, the total contribution to the Big Island agriculture sector was 14.4 percent in 2019. Tourism's contribution to agriculture products in Honolulu County was at 14.4 percent, Kaua'i County at 13.8



percent and Maui County at 13.2 percent. Tourism's contribution to Hawai'i agricultural products statewide was at 14.1 percent including direct, indirect, and induced impacts.

For processed food, tourism contributed the most to the Hawai'i County manufactures at 18.9 percent, followed by Kaua'i County at 17.5 percent, Maui County at 17.4 percent, and Honolulu County at 15.8 percent. Statewide overall contribution was at 16.5 percent.

Combining agricultural products and processed food, tourism contributed \$97.7 million or 3.8 percent directly to the agriculture industry sales at farm gate and producer's value, \$240.7 million or 9.4 percent of the total agriculture industry sales if including indirect visitor spending, and \$399.1 million or 15.6 percent if also including the spending by tourism industry and supporting industry workers.

The results indicate that the Hawai'i tourism contribution to local agriculture products and processed food was lower than the overall tourism contribution to Hawai'i's total output. According to DBEDT's estimate, the tourism contribution to the overall output in 2019 was 19.7 percent, including direct and indirect impact as compared with 9.4 percent contribution to agriculture.

In 2019, the average daily visitor on the islands was 245,733, which accounted for 15.6 percent of Hawai'i's total de facto population<sup>3</sup>. Again, tourism's contribution to Hawai'i agriculture was lower than the de facto population share. The lower contribution to Hawai'i's agriculture may be attributed to the spending pattern and product mix of Hawai'i visitors. Hawai'i visitors spent about 4 percent of their total expenditure on groceries while in Hawai'i in 2019<sup>4</sup> versus Hawai'i residents that spent over 10 percent of their total spending on groceries<sup>5</sup> (food at home). Hawai'i visitors spent 14 percent of their budget on restaurant food. However, restaurants in Hawai'i purchased only 10.5 percent of local produce and processed food, a majority of produce and ingredients purchased by Hawai'i restaurants were imported<sup>6</sup>.

Using the 2017 Hawai'i Inter-County Input-Output Model, DBEDT estimated that Hawai'i households purchased about 50.6 percent of the agriculture (fresh and processed food) output, exports accounted for 37 percent, tourism at about 9.4 percent, and government at about 3 percent.

Increasing the consumption of locally produced fresh and processed food would likely boost the local production. The progress can be measured by the value of visitor spending on agricultural products and processed food directly and indirectly.

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<sup>3</sup> De facto population include resident population plus daily visitors subtract residents temporarily out of state.

<sup>4</sup> Hawai'i Tourism Authority, [2019 Annual Visitor Research Report \(hawaii-tourism-authority.org\)](https://www.hawaii-tourism-authority.org/2019-annual-visitor-research-report)

<sup>5</sup> DBEDT, 2021 State of Hawaii Data Book, Table 13.30. [133020.pdf \(hawaii.gov\)](https://www.dbedt.hawaii.gov/data-book/2021-state-of-hawaii-data-book-table-13.30)

<sup>6</sup> DBEDT, 2017 State Input-Output Study and 2017 Hawaii Inter-County Input-Output Study. [http://dbedt.hawaii.gov/economic/reports\\_studies/2017-io/;](http://dbedt.hawaii.gov/economic/reports_studies/2017-io/)