

Commercialization of AgTech in Hawai'i

— Ulupono Initiative

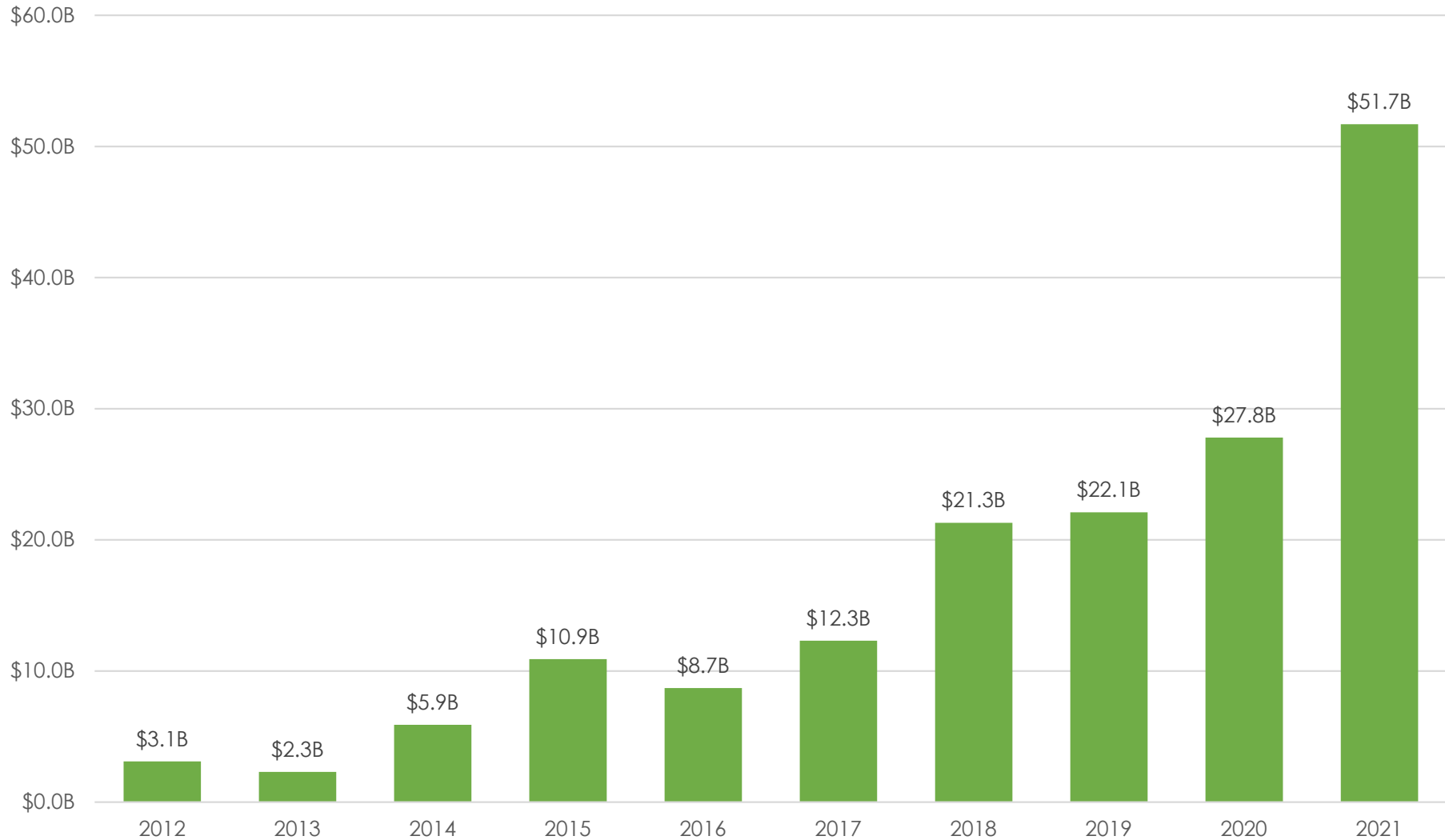


June 23, 2022

Agrifoodtech Investment

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Annual Agrifoodtech Investment



Agrifoodtech Categories

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Ag Biotechnology

On-farm inputs for crop & animal ag including genetics, microbiome, breeding, animal health.



Agribusiness Marketplaces

Commodities trading platforms, online input procurement, equipment leasing.



Bioenergy & Biomaterials

Non-food extraction & processing, feedstock technology, cannabis pharmaceuticals.



Farm Management Software, Sensing & IoT

Ag data capturing devices, decision support software, big data analytics.



Farm Robotics, Mechanization & Equipment

On-farm machinery, automation, drone manufacturers, grow equipment.



Midstream Technologies

Food safety & traceability tech, logistics & transport, processing tech.



Novel Farming Systems

Indoor farms, aquaculture, insect, & algae production.



Innovative Food

Cultured meat, novel ingredients, plant-based proteins.



In-Store Retail & Restaurant Tech

Shelf-stacking robots, 3D food printers, POS systems, food waste monitoring IoT.



Restaurant Marketplaces

Online tech platforms delivering food from a wide range of vendors.



eGrocery

Online stores and marketplaces for sale & delivery of processed & un-processed ag products to consumer.



Home & Cooking Tech

Smart kitchen appliances, nutrition technologies, food testing devices.






Online Restaurants and Meal Kits

Startups offering culinary meals and sending pre-portioned ingredients to cook at home.



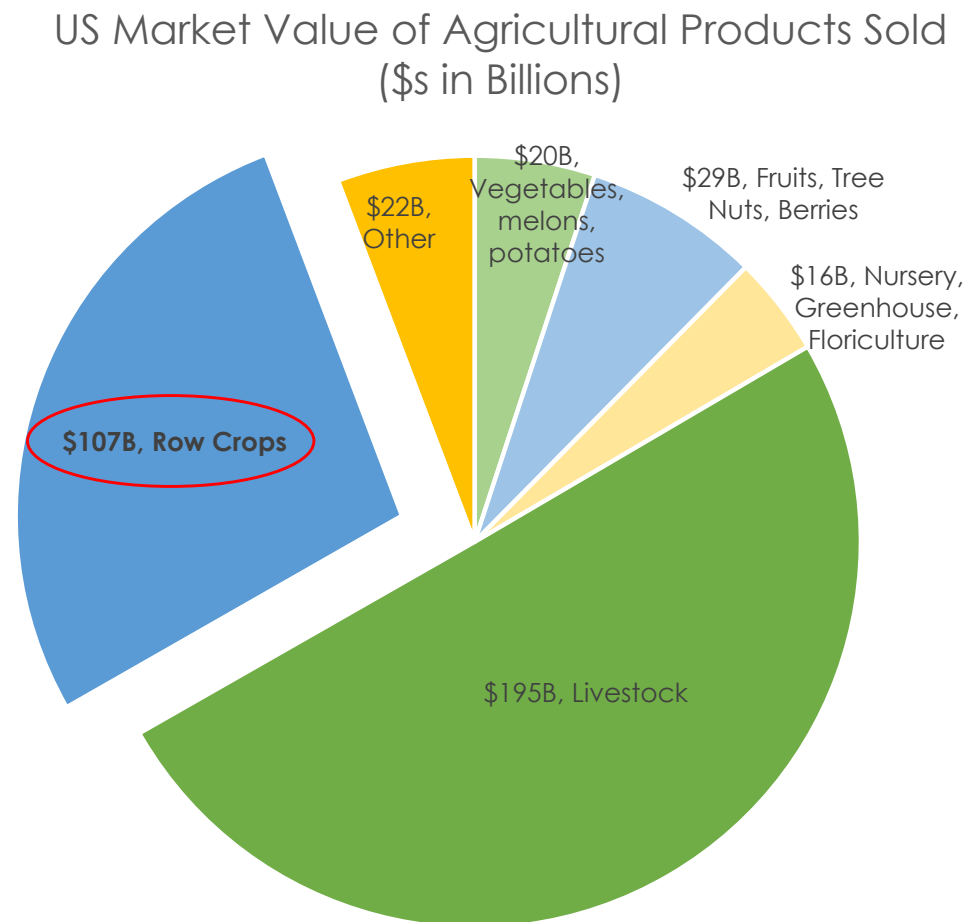
Miscellaneous

e.g. fintech for farmers

 Upstream
 Downstream
 Upstream+Downstream

Mainland Crops Provide Massive Customer Bases

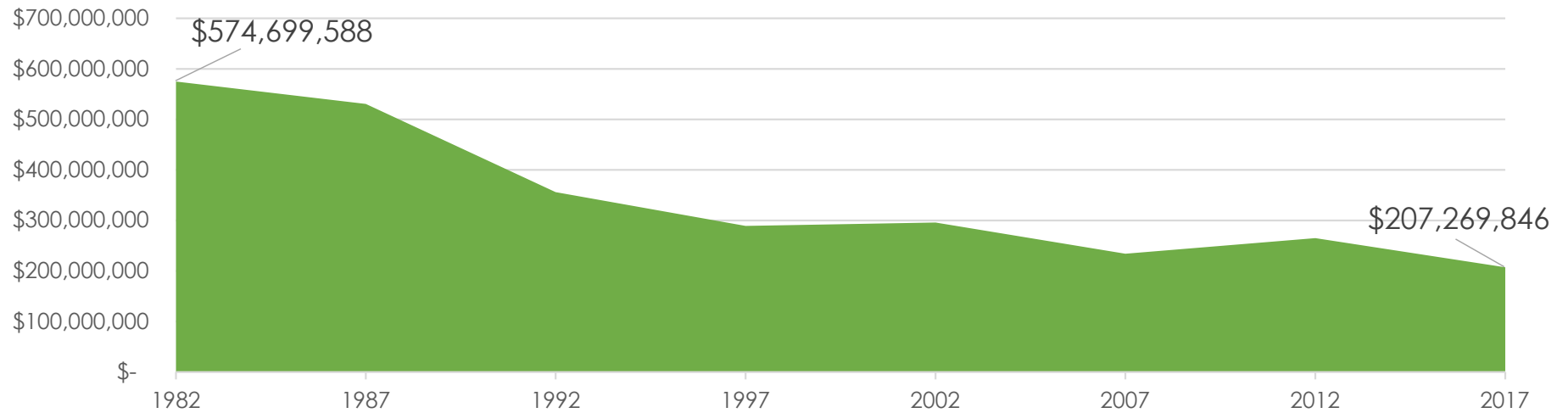
The market value of agricultural products sold in Hawaii is ~\$560MM, around 1/2 a percent of the size of the row crop industry



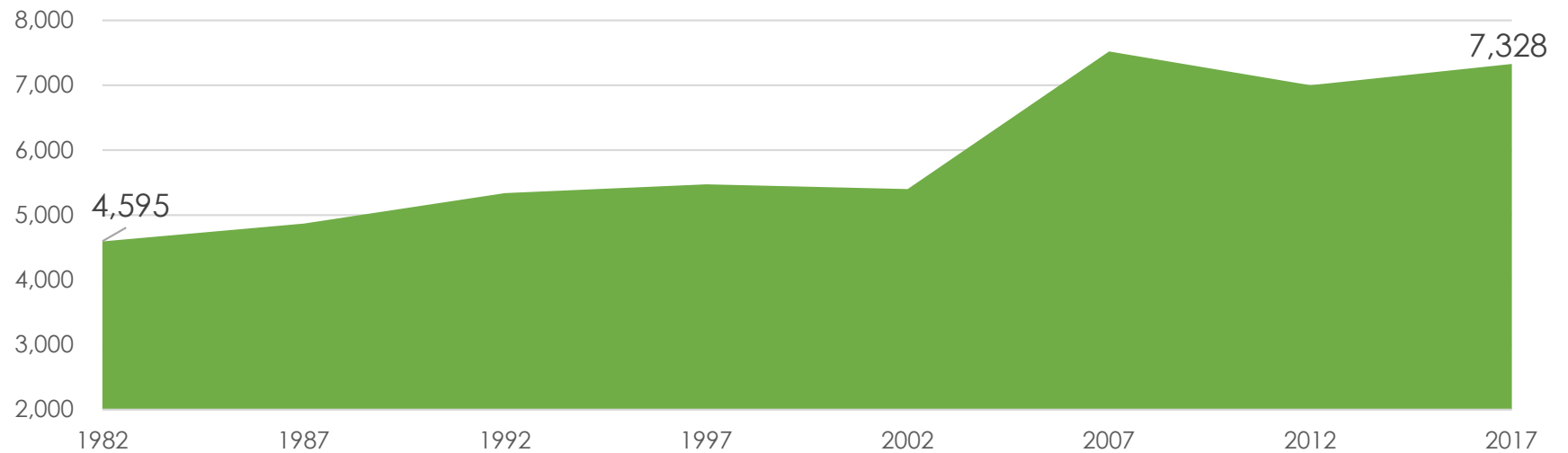
Decreasing Agricultural Sales & Increasing Farm Count

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Hawai'i Agricultural Product Sales CPI Deflated Dollars



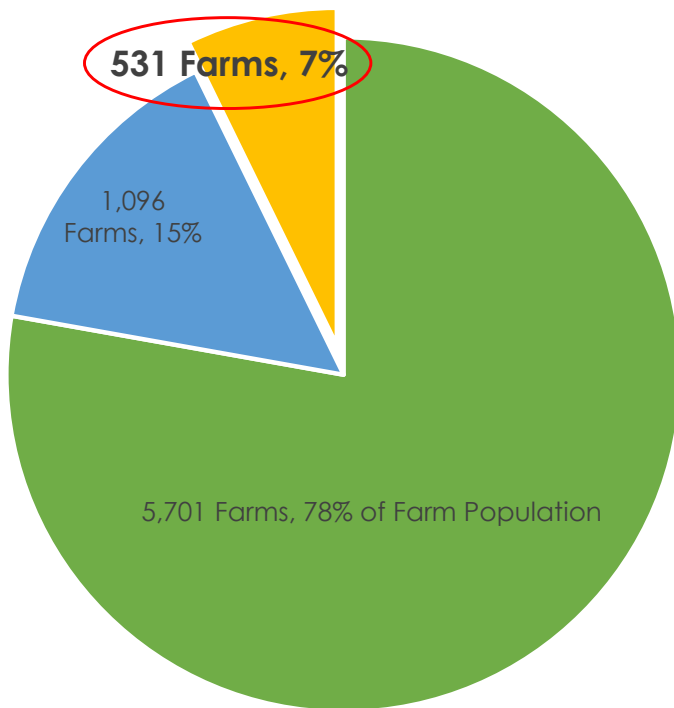
Hawai'i Farm Count



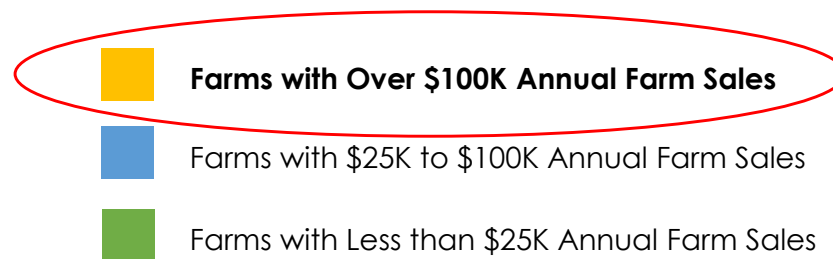
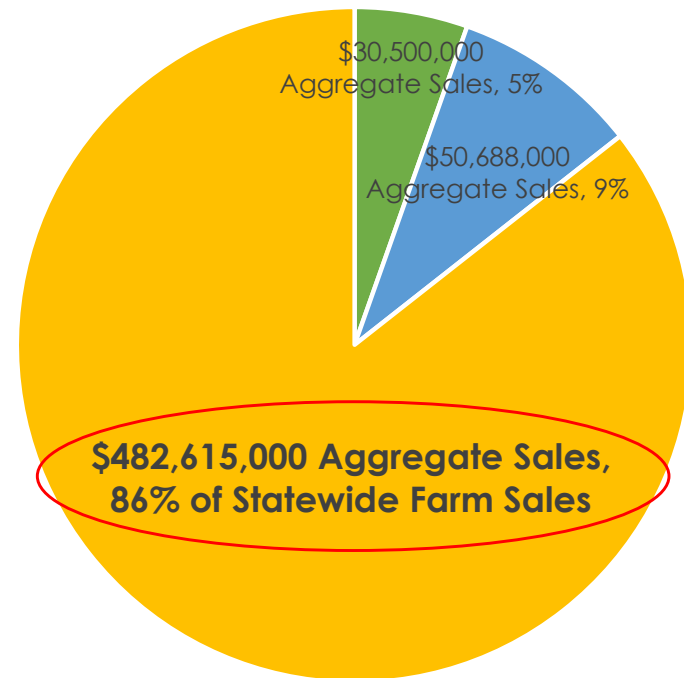
78% of Hawai'i Farms Make Less Than \$25K in Annual Sales

At the same time, the largest 7% of Hawai'i farms generate more than 86% of industry sales

Farms by Annual Farm Sales



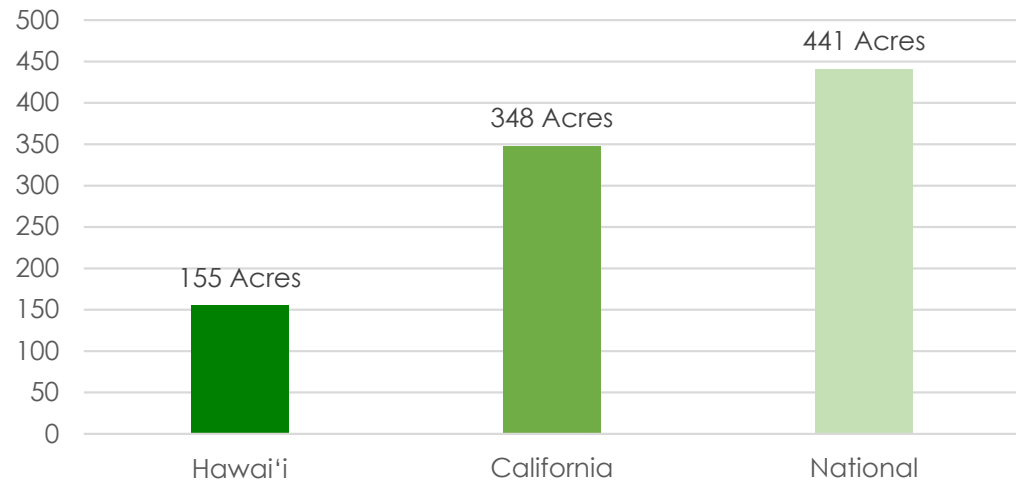
Farms' Share of 2017 Statewide Farm Sales



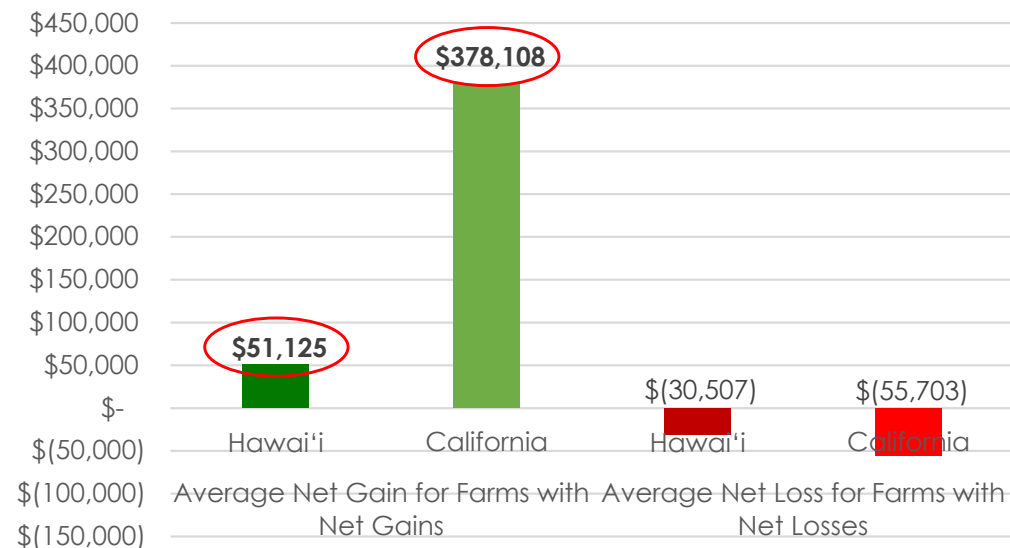
Smaller Farms Have Less Capital Available for Investment

- The average size of a Hawai'i farm is 1/3 the size of the national average
- The average net gain of a profitable Hawai'i farm is less than 1/7 the net gain of a profitable California farm
- In general, smaller farms have less capital available to invest in equipment and technology

Average Farm Acreage



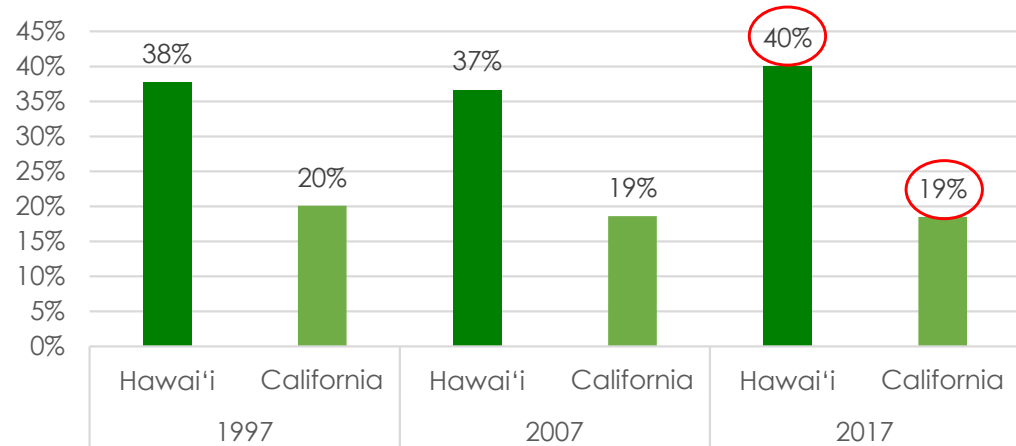
Average Farm Profitability



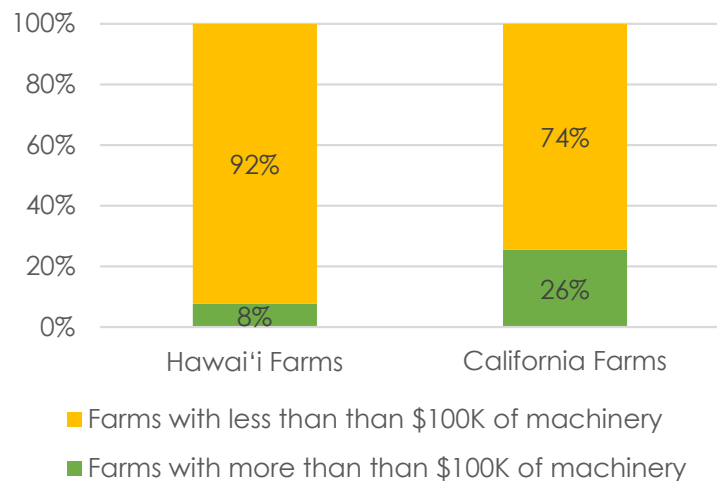
Evidence of Hawai'i's Low Adoption Rate

- More labor input implies less automation and technology adoption
- Labor productivity is calculated by dividing gross receipts of farms by hired workers
- Automation and technology adoption increases output per worker

Hired Farm Labor as Percentage of Farm Production Expenses



Farm Machinery



Labor Productivity (Output Per Worker) (\$s in thousands)

