Profitability of Farm Operations in Hawai‘i

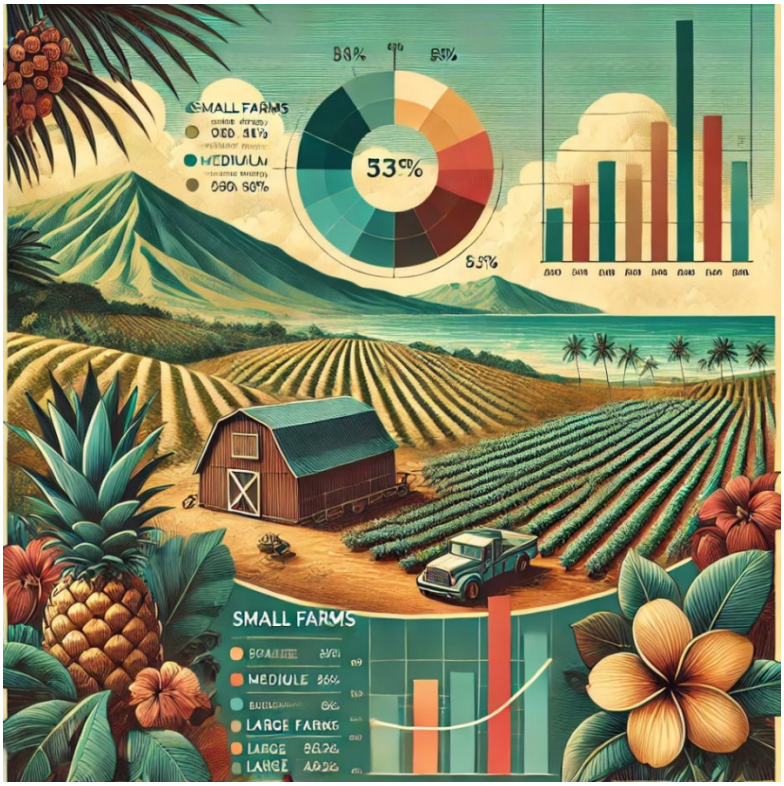

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. EXECUTIVE SUMMARY

Agriculture plays a vital role in Hawai‘i’s economy, culture, and food security. Despite its small share of the state’s GDP, Hawai‘i’s agriculture sector supports local employment, exports, and agribusinesses. There is also a growing emphasis on increasing local food production to achieve greater food self-sufficiency, following the COVID-19 pandemic and subsequent supply chain disruptions. For instance, the Hawai‘i 2050 Sustainability Plan calls for doubling local food production by 2030. However, Hawai‘i’s agriculture sector faces many challenges, including high land and input costs, labor shortages, pests and diseases, invasive species, and limited access to affordable farmland and irrigation water. Therefore, there is a perception that agricultural operations in Hawai‘i may not be economically viable. This report aims to address this knowledge gap by providing an overview of Hawai‘i’s agriculture sector and an analysis of its profitability, and an insight into how policy makers can support the sector.

The 2022 Census of Agriculture, conducted by the United States Department of Agriculture (USDA), estimated that Hawai‘i had 6,569 farms operating on approximately 1 million acres of agricultural land. Roughly two-thirds of these farms were small-scale operations with less than 10 acres, and 59% generated less than $10,000 in annual sales revenue. To remain financially profitable and operationally efficient in 2022, Hawai‘i’s farms, on average, needed to operate at least 10 acres of farmland or generate over $100,000 in agricultural product sales. However, only 8.8% of farms, or 579 farms surpassed this sales threshold in Hawai‘i. In comparison, 26.2% of farms across the United States achieved profitability by generating over $50,000 in agricultural product sales.

High-income farms were more likely to operate on larger tracts of land, leveraging economies of scale to achieve higher net profits. However, larger-scale operations (e.g., farms with more than 100 acres) were not necessarily more profitable than smaller-scale operations, indicating potential diminishing returns to scale. On average, farms operating within the range of 70.0 to 99.9 acres achieved the highest profitability as measured by financial metrics such as Output Input Ratio and Returns on Assets. Only 101 out of 6,569 farms operated within this range, representing just 1.5% of Hawai‘i’s farms and 0.8% of Hawai‘i’s agricultural land. About 44% of these farms were cattle ranches, while 16.8% were fruit & tree nut farms.

Land acquisition is cost-prohibitive in Hawai‘i, and affordable long-term land leasing is constrained by scarcity. To mitigate this barrier to agricultural expansion, policy makers could broaden land-leasing programs such as the Agricultural Park Program. While farms generating annual sales revenue between $5,000 and $99,999 achieved gross profits, they remained economically unviable in the long term, relying on government assistance and additional farm-related income. Expanding financial support through tax incentives, targeted grants, low-interest loans, and training programs in marketing, cost management, and income diversification could enhance their economic viability. Furthermore, adopting innovative and efficient agricultural practices and technologies could help reduce high production costs across all farms.

II. BACKGROUND

The USDA defines a farm as any place that produced and sold, or normally would have sold, $1,000 or more of agricultural products during the census year. This definition also encompasses farms with sales of less than $1,000, but having the potential for sales of $1,000 or more, and includes government payments in some cases where farms may not have directly sold products but still received agricultural support. As noted earlier, Hawai‘i had an estimated 6,569 farms operating on 1 million acres of farmland in 2022. The USDA classifies these farms into size and sales groups based on their total land area and total market value of agricultural products sold. For example, farm size is divided into 12 groups: 1.0 – 9.9 acres; 10.0 – 49.9 acres; 50.0 – 69.9 acres; 70.0 – 99.9 acres; 100 – 139 acres; 140 – 179 acres; 180 – 219 acres; 220 – 259 acres; 260 – 499 acres; 500 – 999 acres; 1,000 – 1,999 acres; 2,000 or more acres. Annual sales revenue is divided into 11 groups: Less than $1,000; $1000 to $2,499; $2,500 to $4,999; $5,000 to $9,999; $10,000 to $24,999; $25,000 to $49,999; $50,000 to $99,999; $100,000 to $249,999; $250,000 to $499,999; $500,000 to $999,999; and $1,000,000 or more. The financial and operational data in this report represent aggregated totals from farms within these categories, offering a structured analysis of the agriculture sector.

1. Distribution of Agricultural Operations in Hawai‘i

In 2022, 64.4% of all farms in Hawai‘i (4,231 out of 6,569) were small-scale operations with less than 10 acres, averaging 4 acres per farm. Table 1 shows that this proportion stands in stark contrast to the national average, where only 12.3% of farms fell within this category. These small-scale farms collectively occupied just 1.4% of Hawai‘i’s agricultural land. When farms with 10.0 - 49.9 acres were included, nearly all farms in Hawai‘i (90%) operated on less than 50 acres, utilizing 4.6% of the total farmland. In contrast, 1.1% of Hawai‘i’s’ farms (74 out of 6,569) operated on 2,000 acres or more, controlling 78.4% of the total farmland (825,545 out of 1,053,302 acres), with an average farm size of 11,156 acres, which is nearly twice the national average (6,444 acres). This indicates a significant disparity in the distribution of scarce land resources among agricultural operations in Hawai‘i.

Table 2 shows that farms with annual sales revenue of less than $1,000 comprised the largest group, accounting for 22% of all farms in Hawai‘i (1,443 out of 6,569), which is close to the national average of 26.3% for this sales group. Furthermore, nearly 60% of all farms in Hawai‘i (3,879) generated less than $10,000 in annual sales revenue. About one-third of Hawai‘i’s farms (2,111) reported annual sales revenue between $10,000 and $99,999, while 8.8% (579 farms) generated over $100,000. Only 1.7% of Hawai‘i’s farms (110) surpassed annual sales revenue of $1 million. This small group of high-income farms occupied 34.1% of Hawai‘i’s farmland (359,315 out of 1,053,302 acres), a share comparable to the United States as a whole (31.3%). In general, the average farm size tends to increase with higher annual sales revenue in both Hawai‘i and the United States.

2. Distribution of Agricultural Land in Hawai‘i

Figure 1(a) and Table 3 show that pastureland constitutes the majority of Hawai‘i’s agricultural land, accounting for 68.7% of the total (724,083 out of 1,053,032 acres). This pastureland consists of coastal plains, plateaus, ridges, rolling hills, mountainous and sloped areas, and volcanic and rocky landscapes. Approximately 15% of Hawai‘i’s agricultural land (158,053 acres) was identified as cropland cultivated with a variety of agricultural products such as vegetables, fruits, tree nuts, and field and horticultural crops. As shown in Figure 1(b), macadamia and coffee were the leading crops, in terms of acres operated, covering 16,894 acres and 9,422 acres, respectively. Other major crops included flowers (1,076 acres), corn for seed (2,176), bananas (1,039 acres), nursery plants (912 acres), papayas (828 acres), hay (820 acres), avocados (810 acres), tomatoes (700 acres), fresh herbs (677 acres), taro (557 acres), and sweet potatoes (539 acres). Table 3 also shows that some of the cropland (19,011 acres) was used for pasture only, and nearly half of the cropland (78,664 acres) was reported as idle, fallow, or failed. It is important to note that the census data represents a snapshot of land use during the census year and may not reflect current or future land utilization, as noted in footnotes of Table 3. In addition to cropland and pastureland, Hawai‘i had 87,077 acres of woodland, representing approximately 8% of the total farmland in 2022.

3. Distribution of Farms by Area Operated and Industry in Hawai‘i

The USDA uses the North American Industry Classification System (NAICS) to categorize the agricultural sector into crop and animal production subsectors. These subsectors can be further divided into industry groups, including Oilseed and Grain; Vegetable and Melon; Fruit and Tree Nut; Greenhouse, Nursery, and Floriculture; Sugarcane, Hay, and All Other Crop; Beef Cattle and Ranching, Cattle Feedlots, Dairy Cattle and Milk; Hog and Pig; Poultry and Egg; Sheep and Goat; and Aquaculture and Other Animal. Furthermore, these industry groups can be subdivided based on their operation scale, such as acreage.

Table 4 shows that Hawai‘i had a total of 6,569 farms across 12 industry groups in 2022. The Fruit and Tree Nut industry was the largest group with 2,688 farms, representing 40.9% of the total. Approximately 76% of farms in the Fruit and Tree Nut industry (2,036 out of 2,688) operated on less than 10 acres, while an additional 20% (533 out of 2,688) operated on 10.0 to 49.9 acres. This indicates that almost all farms in the Fruit and Tree Industry (96%) operated on less than 50 acres. Figure 2 shows a similar pattern across all other industry groups, except for the Beef Cattle and Ranching industry, where 41% of farms operated on 50 acres or more. However, large-scale farms do exist outside of beef cattle and ranching operations. For example, the Fruit and Tree Nut industry had 10 farms operating on 2,000 or more acres, followed by the Greenhouse, Nursery, and Floriculture industry (2), Vegetable and Melon industry (3), Aquaculture and Other Animal industry (3), Sheep and Goat industry (2), Dairy Cattle and Milk industry (1), and Oilseed and Grain industry (3).

III. PROFITABILITY OF FARM OPERATIONS BY ACREAGE

1. Agricultural Product Sales, Government Payments, and Income from Farm Related Sources

Hawai‘i’s farms generate income from agricultural product sales, government payments, and farm-related activities. Table 5 shows that the total income earned by all farms in Hawai‘i was estimated at $762.9 million in 2022. This comprised $673.7 million from the market value of agricultural products sold (88% of the total), $15.5 million from government payments (2% of the total), and $73.6 million from farm-related activities (10% of the total). The average total income per farm was $116,114 in Hawai‘i, 61.6% lower than the national average of $302,965 per farm, while the average total income per acre was $724, 11.2% higher than the national average of $654 per acre.

Farms with 2,000 acres or more generated $229.1 million, accounting for 30% of Hawai‘i’s total agricultural income. Their average total income was $3 million per farm or $278 per acre. Conversely, farms with less than 10 acres generated $107.1 million in total income, with an average income of $25,320 per farm or $7,034 per acre, while farms with 10.0 – 49.9 acres generated $170.9 million in total income, with an average income of $101,827 per farm or $5,009 acre. Figure 3(a) shows that these farms represented three of the largest income groups. Table 5 also shows that large-scale operations earned higher total income on a per-farm basis, whereas small-scale operations earned higher total income on a per-acre basis. This suggests that, based on the aggregated totals, small-scale operations may, on average, utilize their farmland more efficiently to generate income.

2. Farm Production Expenses

Farm production expenses reported by Hawai‘i’s farms totaled $620.2 million. These expenses were divided into variable and fixed cash expenditures, accounting for 88% ($544.1 million) and 12% ($76.1 million) of the total, respectively. Variable cash expenditures include labor, seeds, plants, feed, animals, chemicals, fuels, utilities, supplies, and other agricultural services, while fixed cash expenditures include interest, rent, and taxes. The average total farm expenses in Hawai‘i were $94,423 per farm or $589 per acre, compared to the national averages of $223,175 per farm or $482 per acre.

Figure 3(b) shows that farms with more than 2,000 acres incurred the highest production expenses ($176 million), followed by farms with 10.0 – 49.9 acres ($137.4 million) and farms with less than 10 acres ($104.3 million). The average total expenses for farms with more than 2,000 acres were estimated at $2.3 million per farm, whereas farms with less than 10 acres averaged $24,654 per farm. However, when viewed on a per-acre basis, farms with more than 2,000 acres averaged $213 per acre in production expenses, compared to $6,849 per acre for farms with less than 10 acres. This pattern mirrors the distribution of total farm income: on average, small-scale operations incur lower production expenses per farm but face much higher costs per acre.

3. Value of Land, Buildings, Machinery, and Equipment

The total value of land and buildings used by Hawai‘i’s farms was estimated at $12 billion, while the total value of machinery and equipment was estimated at $401.5 million. Land and buildings accounted for 97% of the total asset value, with machinery and equipment comprising the remaining 3%. On average, the total asset value per farm in Hawai‘i was $1.8 million, which closely matched the national average of $1.9 million per farm. However, on a per-acre basis, Hawai‘i’s average total asset value was $11,792, nearly three times higher than the national average of $4,201, reflecting the higher value of land and buildings in Hawai‘i.

Figure 3(c) shows that farms with more than 2,000 acres, a group of farms representing 1.1% of Hawai‘i’s farms (74 out of 6,569) and occupying 78.4% of Hawai‘i’s farmland (825,545 out of 1,053,302 acres), held the largest share of total asset value at $4.6 billion. Other major asset holders include farms with less than 10 acres, valued at $3 billion, and farms with 10.0 – 49.9 acres, valued at $2.1 billion. However, these smaller-scale farms (5,910 out of 6,569) occupied only 4.6% of the total farmland. As a result, Table 5 shows that farms with more than 2,000 acres had an average total asset value of $62 million per farm, compared to $746,000 per farm for those under 10 acres, and an average total asset value of $1.3 million per farm for those with 10.0 – 49.9 acres.

Conversely, on a per-acre basis, the average total asset value of farms over 2,000 acres was substantially lower at $5,586, compared to $207,129 for farms with less than 10 acres and $66,104 for farms with 10.0 – 49.9 acres. This suggests that smaller-scale farms tend to own or lease agricultural land with a much higher dollar value per acre. Notably, Table 4 shows that 65% of farms with more than 2,000 acres (48 out of 74) were cattle ranches in 2022, operating on pastureland where land values are typically lower, and the land is not as productive or intensely utilized as cropland.

4. Net Cash Income, Gross Profit, and Net Profit

Net Cash Income (NCI) is calculated by subtracting variable and fixed cash expenditures from total farm income, providing insight into a farm’s cash flow. However, NCI does not take into account depreciation costs, which are essential for accurately capturing the long-term costs of utilizing fixed assets. In other words, excluding depreciation costs would overstate profitability. Therefore, Net Profit (NP) is used to measure long-term profitability by accounting for all expenses, including variable cash expenditures, fixed cash expenditures, and depreciation, deducted from total farm income. On the other hand, Gross Profit (GP) focuses on operational efficiency by considering only variable cash expenditures. GP and NP are often viewed as indicators of short- and long-term profitability, respectively. According to economic cost theory, farms can continue operating in the short run even with negative NP, provided that they can cover some of their variable costs or maintain positive GP.

The total NCI of all farms in Hawai‘i was estimated at $142.6 million, averaging $21,721 per farm or $135 per acre, compared to the national averages of $79,790 per farm or $172 per acre. The total GP of all farms in Hawai‘i was estimated at $218.8 million, averaging $33,309 per farm or $208 per acre, compared to the national averages of $108,733 per farm or $235 per acre. The total NP of all farms in Hawai‘i was estimated at $69.8 million, averaging $10,636 per farm or $66 per acre, compared to the national averages of $58,079 per farm or $125 per acre. These figures indicate that, on average, Hawai‘i’s farms generated lower profits than their counterparts across the United States.

Figure 4(a) shows that, in Hawai‘i, farms with more than 2,000 acres reported the highest total NCI of $53.1 million, followed by farms with 10.0 – 49.9 acres ($33.5 million) and farms with 70.0 – 99.9 acres ($33.2 million). Farms with 220 – 259 acres were the only group to report losses, with a negative total NCI of $344,000. All other farm groups achieved positive total NCIs, albeit at significantly lower levels, ranging from $619,000 for farms with 260 – 499 acres to $5.8 million for farms with 50.0 – 69.9 acres.

Figure 4(b) shows that, since GP takes into account only variable cash expenditures, total GPs are higher than total NCIs for all farm groups. All farm groups achieved positive total GPs, suggesting that they were, on average, financially profitable in the short term. However, when accounting for all production costs including variable and fixed expenditures, as well as depreciation, Figure 4(c) shows that only farms between 10 – 219 acres and farms with more than 2,000 acres achieved positive total NPs. These farms represented 32.4% of Hawai‘i’s farms (2,126 out of 6,569). In contrast, farms with less than 10 acres and between 220 – 1,999 acres made total NP losses, ranging from -$1.1 million for farms with 1,000 – 1,999 acres to -$10.4 million for farms with less than 10 acres. Interestingly, every acreage interval across the United States achieved positive total NPs. This is due to Hawai‘i’s minimal contribution (0.06%) to the national total net profit, and farms on the continental United States are, on average, more profitable.

Figure 5 presents a summary of net cash income (NCI), gross profit (GP), and net profit (NP) by acreage on a per-farm and per-acre basis, each of which is comparable to the corresponding metric in Figure 4. A notable aspect of Figure 5 is that, on a per-acre basis, farms with 70.0–99.9 acres recorded the highest NCI, GP, and NP, whereas farms with more than 2,000 acres exhibited one of the lowest NCI, GP, and NP values. This is likely because large-scale operations, such as cattle ranches on extensive pastureland, may not be able to fully utilize their land to generate income from every acre they own or rent. For instance, farms with 70.0 – 99.9 acres made a net profit of $3,777 per acre, which is 21 times higher than that of farms with 2,000 acres or more ($66 per acre). Moreover, other larger-scale farms (e.g., farms operating between 220 – 1,999 acres) made total NP losses, ranging from -$17 per acre for farms with 1,000 – 1,999 acres to -$284 for farms with 220 – 259 acres. However, on a per-farm basis, farms with more than 2,000 acres, a group of 74 farms that controlled 78.4% of Hawai‘i’s farmland, achieved the highest NCI, GP, and NP, reflecting the advantages of their economies of scale.

5. Output-Input Ratio and Return on Assets

The Output-Input Ratio (OIR) measures production efficiency by comparing the value of output (total farm income) to the costs of inputs (total farm production expenses including variable cash expenditures, fixed cash expenditures, and depreciation). An OIR greater than 1 reflects production efficiency, while an OIR less than 1 indicates production inefficiency. Table 5 shows that the OIR for all farms in Hawai‘i averaged 1.1, compared to the national average of 1.24, indicating that Hawai‘i’s farms were less efficient in production than their counterparts across the United States. Nonetheless, the OIR of 1.1 suggests that, on average, Hawai‘i’s farms were efficiently using their resources to produce output. However, Figure 6(a) shows that not every farm achieved an OIR greater than 1. For example, farms between 220 – 1,999 acres and farms under 10 acres recorded an OIR less than 1, suggesting production inefficiencies. Notably, farms with 70.0 – 99.9 acres attained the highest OIR of 1.94, producing output nearly double the value of their input costs.

Return on Assets (ROA) measures how effectively a farm utilizes its assets, such as land, buildings, machinery, and equipment, to generate net profit. It is calculated by dividing total net profit by total asset value and multiplying by 100 to express the result as a percentage. The average ROA value for Hawai‘i’s farms was 0.56%, significantly lower than the national average of 2.99%. However, Hawai‘i’s farms, on average, made positive returns on assets, indicating effective asset utilization. Similarly, Figure 6(b) shows that farms between 10.0 – 219 acres, as well as farms with more than 2,000 acres, exhibited positive ROA values, while farms under 10 acres and farms between 220 – 1,999 acres exhibited negative ROA values. Farms with 70.0 – 99.9 acres achieved the highest ROA at 13.87%, generating $31.2 million in total net profit from $224.9 million in total assets, equivalent to $13.87 per dollar of assets. In comparison, farms with more than 2,000 acres generated 71 cents for every dollar of assets, while farms between 220 and 1,999 acres and under 10 acres reported negative returns.

The OIR and ROA values suggest that, based on the aggregated total averages, farms operating on 70.0 to 99.0 acres achieved the highest profitability in the long term. Table 1 shows that only 101 out of 6,569 farms operated within this range, representing just 1.5% of all farms in Hawai‘i. Additionally, Table 4 shows that approximately 44% of these farms were beef cattle ranches. Figure 6 also suggests that large-scale operations, such as those with more than 100 acres, were not always financially profitable or operationally efficient. Many of these larger farms, often cattle ranches, exhibited negative or significantly reduced returns. Lastly, farms with less than 10 acres could potentially achieve profitability by acquiring or leasing additional land and expanding into the group of farms with 10.0 – 69.9 acres. However, agricultural expansion in Hawai‘i faces many barriers, such as cost-prohibitive land ownership, the reluctance of large landowners to lease to small, fragmented farmers, and constrained access to affordable agricultural land (e.g., the State’s Agricultural Park Program) due to land scarcity.

IV. PROFITABILITY OF FARM OPERATIONS BY ANNUAL SALES REVENUE

1. Agricultural Product Sales, Government Payments, and Income from Farm Related Sources

As discussed in Section III.1, Hawai‘i’s farms reported an estimated total farm income of $762.9 million in 2022. This consisted of $673.7 million from agricultural product sales, $15.5 million from government payments, and $73.6 million from farm-related sources. The average total income per farm was $116,114 in Hawai‘i, 61.6% lower than the national average of $302,965 per farm, while the average total income per acre was $724, 11.2% higher than the national average of $654 per acre.

Table 6 provides a detailed breakdown of the total farm income by annual sales revenue. For example, farms with sales exceeding $1 million generated $487.5 million, accounting for 63.9% of Hawai‘i’s total farm income. In contrast, farms with sales between $1,000 and $2,499 generated the lowest farm income at $1.9 million. Figure 7(a) shows that high-income farms derived most of their income from agricultural product sales, while small-income farms, particularly farms with sales less than $1,000, relied more heavily on other sources of income such as government payments and farm-related activities. For example, farms with sales of less than $1,000 generated 5% of their income from the market value of agricultural products sold, 39% from government payments, and 56% from income from farm-related sources. The government payments reported in the agricultural census consist of payments from federal conservation programs and Commodity Credit Corporation loans, while income from farm-related sources include sales of farm byproducts, agritourism, recreation and other agricultural services, insurance payments, rents, and amounts from state and local government agricultural program payments. It is worth noting again that farms with sales of less than $1,000 included farms that may not have directly sold products but still received agricultural support during the census year.

Table 6 shows the significant disparity in average total income between groups, with farms exceeding $1 million in annual sales revenue averaging $4.4 million per farm or $1,357 per acre, compared to $4,198 per farm or $89 per acre for farms with sales less than $1,000. Table 6 also shows that the average total income per acre rose in tandem with higher annual sales revenue, which contrasts with the pattern observed earlier in Section III.1, where the average total income per acre decreased as the acreage scale increased. This implies that, unlike small-scale farms utilizing their land more efficiently to generate income, high-income farms were making more efficient use of their farmland relative to low-income farms. However, the aggregated nature of the data makes it difficult to validate this implication. It is possible that the observed association between average total income per acre and annual sales revenue, as shown in Table 6, might stem from high-income farms generally having more acres relative to small-income farms, rather than reflecting genuine differences in their operational efficiency. It would require more information on specific commodity types and farm practices to better understand the factors contributing to these differences. This topic will be further discussed in subsequent sections.

2. Farm Production Expenses

As discussed in Section III.2, farm production expenses in Hawai‘i totaled $620.2 million, comprising $543 million in variable cash expenditures and $77.2 million in fixed cash expenditures. Hawai‘i’s average total expenses per farm were estimated at $94,423, approximately 58% lower than the national average of $223,175 per farm. However, on a per-acre basis, Hawai‘i’s average total expenses were $589, approximately 22% higher than the national average of $482 per acre.

Table 6 shows that, in Hawai‘i, farms with sales exceeding $1 million accounted for $358.7 million ($327.6 million in variable cash expenditures and $31.1 million in fixed cash expenditures), averaging $3.2 million per farm or $998 per acre. By comparison, farms with sales less than $1,000 incurred $21.5 million in total expenses ($14.8 million in variable cash expenditures and $6.7 million in fixed cash expenditures), averaging $14,915 per farm or $316 per acre. Figure 7(b) illustrates the significant disparity in total farm production expenses between these two groups.

Notably, on a per-farm basis, total farm expenses tend to increase with higher annual sales revenue. However, on a per-acre basis, total farm expenses tend to decline after reaching a peak of $1,487 for farms with sales between $2,500 and $4,999. For example, total farm expenses per acre increased from $316 for farms with sales less than $1,000 to $1,487 for farms with sales between $2,500 and $4,999. Subsequently, total farm expenses decreased to $219 per acre for farms with sales between $500,000 and $999,999.

3. Value of Land, Buildings, Machinery, and Equipment

As discussed in Section III.3, Hawai‘i’s farms had an estimated $12.4 billion in total assets, including $12 billion in land and buildings and $401.5 million in machinery and equipment. The average asset value per farm in Hawai‘i was $1.8 million, slightly below the national average of $1.9 million per farm. However, on a per-acre basis, Hawai‘i’s total asset value averaged $11,792 per acre, nearly three times higher than the national average of $4,201 per acre, reflecting higher values of assets in Hawai‘i, particularly for land and buildings.

Figure 7(c) shows that farms with sales exceeding $1 million held the largest share of total asset value at $3.1 billion. In contrast, farms with sales less than $1,000, a group that represented 22% of all farms in Hawai‘i, held a total asset value of $1.8 billion. Table 6 shows that, on average, farms with sales exceeding $1 million had a total asset value of $28.3 million per farm, compared to $1.2 million per farm for those with sales under $1,000. Conversely, on a per-acre basis, smaller-income farms generally possessed higher-valued assets. For example, farms with sales between $2,500 and $4,999 held an average asset value of $93,706 per acre, while farms with sales between $500,000 and $999,999 held an average asset value of $4,482 per acre. This pattern is analogous to the pattern observed in total asset value expenses discussed earlier.

4. Net Cash Income, Gross Profit, and Net Profit

As discussed in Section III.4, the total net cash income (NCI) of all farms in Hawai‘i was estimated at $142.6 million, with an average total NCI of $21,721 per farm, 73% lower than the national average of $79,790 per farm. On a per-acre basis, Hawai‘i’s average total NCI was $135 per acre, 21% lower than the national average of $172 per acre. Figure 8(a) shows that only farms with sales greater than $50,000 had a positive total NCI. For example, farms with sales between $50,000 to $99,999 reported a total NCI of $2.1 million, whereas farms with sales less than $1,000 reported a negative total NCI of $15.4 million.

The total gross profit (GP) of Hawai‘i’s farms was estimated at $219.9 million, with an average total GP of $33,478 per farm, 69% lower than the national average of $108,733 per farm. On a per-acre basis, Hawai‘i’s average total GP was $209, 11% lower than the national average of $235 per acre. Figure 8(b) shows that only farms with sales greater than $5,000 had a positive total GP. For example, farms with sales between $5,000 to $9,999 reported a total GP of $2.4 million. In contrast, farms with sales of less than $1,000 reported a negative total GP of $8.7 million, indicating that these farms were, on average, financially unprofitable in the short term.

The distribution of total net profit (NP) closely mirrors that of total NCI, but net profit is lower due to the inclusion of depreciation costs. For instance, as shown in Figure 8(c), farms with sales between $50,000 to $99,999 made a total NP loss of $1.8 million, contrasting with a positive total NCI of $2.1 million for this sales group. Figure 8(c) shows that, on average, farms with sales greater than $100,000 (8.8% of Hawai‘i’s farms) reported positive total NPs. As a point of comparison, 26.2% of farms in the United States, specifically those with sales exceeding $50,000, achieved profitability.

Figure 9 presents a summary of net cash income (NCI), gross profit (GP), and net profit (NP) by annual sales revenue on a per-farm and per-acre basis, each of which is comparable to the corresponding metric in Figure 8. Farms with sales under $5,000 experienced losses across all metrics (NCI, GP, and NP), indicating that their operations were not economically viable in the short- and long-term. This would be concerning as these farms represented 44% of all farms in Hawai‘i. However, it is important to note that many of them could be lifestyle farms that typically engage in small-scale farm activities as a secondary source of income or personal hobbies. These farms may not be profit-driven, but collectively contribute to local food production. Farms with sales revenue between $5,000 and $99,999 experienced net profit losses, but maintained positive gross profits, suggesting that they may sustain operations in the short run. However, these farms are less likely to continue operations in the long run, especially if they are commercial farms that do not receive government support or engage in other income-generating activities. These farms accounted for nearly half (47.3%) of all farms in Hawai‘i and would be at greater risk of exiting the market. In contrast, only farms with sales greater than $100,000 (8.8% of Hawai‘i’s farms) were, on average, financially profitable both in the short- and long-term, as indicated by their positive GP and NP.

5. Output-Input Ratio and Return on Assets

As discussed in Section III.5, the OIR and ROA values for all of Hawai‘i’s farms averaged 1.1 and 0.56%, respectively, compared to the national averages of 1.25 and 2.99%. This indicates that the production efficiency and asset utilization of Hawai‘i’s farms were lower than their counterparts across the United States. However, on average, Hawai‘i’s farms achieved an OIR of 1.1, indicating production efficiency, and a ROA of 0.56%, equivalent to earning 56 cents for every dollar of assets. This is because 8.8% of Hawai‘i’s farms with sales greater than $100,000 made positive net profits, and these farms accounted for 85.7% of the total farm income in Hawai‘i.

Figure 10(a) shows that farms with sales over $100,000 had an OIR greater than 1. By comparison, farms with sales under $100,000 had an OIR less than 1. For example, farms with sales between $250,000 and $499,999 achieved the highest OIR of 1.26, while farms with sales between $1,000 and $2,499 had the lowest OIR of 0.2. Similarly, Figure 10(b) shows that farms with sales over $100,000 achieved positive ROA values, while farms with sales under $100,000 had negative ROA values. Specifically, farms with sales exceeding $1 million had the highest ROA of 3.02%, earning a total net profit of $94.1 million from $3.1 billion in assets, or generating $3.02 for every dollar of assets. In contrast, farms with sales between $2,500 and $4,999 had the lowest ROA of -1.30%, incurring a total net profit loss of $7.5 million from $580 million in assets, or a loss of $1.30 per dollar of assets they own or rent. Notably, Figure 10 shows that the farms exhibiting the highest and lowest profitability vary slightly between OIR and ROA. This discrepancy stems from the distinct calculation methods: OIR is a ratio of total farm income to total farm production expenses, while ROA is a total net profit divided by total assets. However, the overall pattern of financial profitability and operational efficiency remains consistent.

The OIR and ROA metrics suggest that agricultural operations in Hawai‘i need to make over $100,000 in annual sales revenue to remain financially profitable and operationally efficient. Moreover, Figure 10 shows a clear trend: as annual sales revenue increases, both OIR and ROA values rise, highlighting a positive correlation between higher sales revenue and more efficient use of resources. However, the specific factors of production driving financial profitability and operational efficiency remain unclear, apart from their association with annual sales revenue. As shown in Tables 2 and 6, both the average acres per farm and the average net profit per acre increase with rising sales revenue. This pattern suggests that higher-income farms may generally operate on larger tracts of agricultural land. However, as previously discussed in Section III.5, larger-scale operations were not necessarily more profitable or efficient than smaller-scale operations. Other important factors, such as commodity types, farm practices, and market conditions, are also likely to influence the financial profitability and operational efficiency of farming operations in Hawai‘i. The aggregated nature of the data does not allow for profitability analysis by commodities or industries.

V. CONCLUSION

The 2022 Census of Agriculture data is used to examine the profitability of farm operations in Hawai‘i across various dimensions, using categorical variables such as farm acreage, annual sales revenue, and industry classification. Hawai‘i’s agricultural sector is characterized by small-scale and low-income farms, operating on less than 10 acres of farmland or earning less than $10,000 in annual sales revenue. In 2022, 64.4% of Hawai‘i’s farms operated on less than 10 acres, and 59.1% generated less than $10,000 in annual sales revenue. Despite their large numbers, these farms occupied a small portion of Hawai‘i’s agricultural land – 1.4% for farms with less than 10 acres, and 9.5% for farms with sales under $10,000. In contrast, 1.1% of Hawai‘i’s farms (those with more than 2,000 acres) occupied 78% of Hawai‘i’s agricultural land, and 8.8% (those with sales exceeding $100,000) occupied 75% of the state’s farmland.

Hawai‘i’s total agricultural land was estimated at 1,053,032 acres, comprising 724,083 acres of pastureland (69%), 158,053 acres of cropland (15%), 87,099 acres of woodland (8%), and 84,067 acres classified as other (9%). Large-scale operations were predominantly cattle ranches utilizing pastureland, while small-scale operations were more likely to cultivate fruits, vegetables, tree nuts, flowers, or nursery plants on cropland. Furthermore, the Fruit and Tree industry accounted for 41% of all farms in Hawai‘i, with 96% of these farms operating on less than 50 acres. In comparison, the Beef Cattle and Ranching industry accounted for 12% of Hawai‘i’s farms, and 41% of cattle ranches operated on 50 acres or more.

Large-scale and high-income operations typically reported higher income and expenses per farm, while small-scale and low-income operations reported higher income and expenses per acre. Similarly, large-scale and high-income operations held significantly greater asset value per farm: this is because a small group of large-scale and high-income operations occupied most of the farmland in Hawai‘i. In contrast, small-scale and low-income operations held assets with greater value per acre: this is probably because many large-scale farms are cattle ranches operating on lower value, less intensely utilized pastureland, compared to cropland owned or leased by small-scale farms. However, it is unclear whether high-income farms are also cattle ranches, given the aggregated data that provide limited information on the relationship between income level and industry classification.

On a per-acre basis, farms with 70.0 – 99.9 acres achieved the highest net profits, while farms with more than 2,000 acres reported some of the lowest net profits. However, on a per-farm basis, those over 2,000 acres achieved the highest net profits, highlighting their ability to leverage economies of scale. Nonetheless, larger-scale operations, particularly those with 100 or more acres, do not always guarantee higher or positive returns. For example, farms with 100 – 139 acres reported a net profit of $273 per acre, 90% lower than a net profit of $4,369 per acre for farms with 70.0 – 99.9 acres, while farms with 220 – 1,999 acres experienced net profit losses. Additionally, farms under 10 acres could potentially achieve positive net profits by increasing their farm size over 10 acres.

High-income farms generated their income mostly from agricultural sales, whereas low-income farms relied more on government payments and income from farm-related activities. This underscores the importance of income diversification for low-income farms to remain financially viable. However, many of these low-income farms, particularly those with sales less than $5,000, could be run by lifestyle and part-time farmers who are not profit-driven and may operate their farms as a secondary source of income. Farms with sales between $5,000 and $99,999 earned sufficient income to cover their immediate cash expenses, allowing them to continue operating in the short term. However, these farms reported net profit losses, indicating that they cannot sustain indefinitely without improving their financial situation or having additional sources of income from non-farm related activities to offset the shortfall. Only farms with sales greater than $100,000 achieved positive net profits, making their operations financially profitable and operationally efficient in the long term. Additionally, 1.7% of farms in Hawai‘i, those exceeding $1 million in annual sales revenue, generated $488 million, representing two-thirds of the total income reported by all farms in Hawai‘i. This highlights the significant income disparity among Hawai‘i’s farms.

The assessment of financial and operational performance of the agricultural sector in Hawai‘i reveals several challenges faced by all farms irrespective of their operation scale and annual sales revenue. Hawai‘i’s agricultural operations were, on average, less profitable and efficient than their counterparts across the United States. For example, only 8.8% of Hawai‘i’s farms, specifically those generating over $100,000 in annul sales revenue, achieved profitability, compared to 26.2% nationwide, where farms with sales exceeding $50,000 in annual sales revenue reported positive total net profits. A significant portion of Hawai‘i’ agricultural land is concentrated within a relatively small group of large-scale, high-income farms. For those seeking to initiate or expand agricultural operations in Hawai‘i, land costs pose a substantial barrier, while tenant farmers may face additional challenges such as short-term, restrictive, and unstable tenure arrangements. It is also worth noting the competing uses for Hawai‘i’s agricultural land, specifically for renewable energy and housing developments.

To address these challenges, policy makers could broaden land leasing programs, such as the State’s Agricultural Park Program, for farmers who can contribute to doubling local food production by 2030, aligning with the Hawai‘i 2050 Sustainability Plan. Furthermore, low-income farms with annual sales revenue between $5,000 and $99,999 faced long-term financial instability and net profit losses, putting them at risk of exiting the market. These farms relied on government payments and other income sources to sustain their operation. Policy makers could support them by enhancing financial assistance programs such as tax incentives, tailored grants, and low-interest loans, while also providing training programs focused on marketing, cost management, and income diversification strategies. Finally, high production expenses incurred by all farms could be mitigated through the promotion and adoption of innovative and efficient agricultural practices or technologies.

VI. DATA LIMITATIONS AND FURTHER RESEARCH

Due to federal confidentiality regulations, the USDA withdraws any information that could identify individual farms in the Census of Agriculture. The USDA also suppresses data that could be extrapolated to estimate the profitability of specific commodity groups or industries. As a result, the profitability analysis in this report is based on aggregated financial and operational data from Hawai‘i’s farms, categorized by acreage, annual sales revenue, and NAICS. It is thus important to recognize that the aggregate data does not equally reflect the situation of all farms within and across different categories. The agricultural sector comprises numerous subsectors and industries characterized by different ownership, commodity type, economic size, geographic locations, and other socioeconomic and environmental factors.

To illustrate this point, findings indicate that 32.4% of farms in Hawai‘i (2,126 out of 6,569) were economically viable, when profitability was analyzed based on acreage intervals. On the contrary, 8.8% of farms (579 out of 6,569) were financially profitable and operationally efficient, when assessed based on annual sales revenue. This discrepancy suggests that additional factors may influence overall profitability. For instance, on average, farms operating on 70.0 – 99.9 acres had the highest profitability in Hawai‘i. However, some farms within this range may generate less than $100,000 in annual sales revenue and experience net profit losses. Likewise, some farms with sales exceeding $100,000 may operate on less than 10 acres, and their profitability can vary depending on other factors such as commodity types, individual farm practices, and market conditions. Furthermore, aggregated totals could be shaped by dominant farms, which influence overall profitability metrics within each category, potentially obscuring non-dominant farms that may differ significantly from others within their group.

Despite these limitations, this report still provides valuable insights into the financial and operational performance of agricultural operations in Hawai‘i. Policy makers may use these findings to inform decisions on government assistance programs tailored to the specific needs of Hawai‘i’s farmers struggling with financial viability and production efficiency. Hawai‘i’s farms may also use these findings as benchmarks to assess their own performance, while agricultural organizations, researchers, and other stakeholders can gain a better understanding of the complex dynamics of Hawai‘i’s agricultural landscape. Finally, the USDA allows eligible researchers, including state government agencies, the opportunity to gain access to restricted microdata files for select statistical research projects. This restricted microdata contains a wealth of detailed information about individual farms, including their specific inputs, outputs, production practices, and financial performance. Further research using these data can enhance the understanding of production factors affecting the profitability of agricultural production in Hawai‘i. By providing a more granular and detailed understanding of the factors that drive farm profitability, this research can contribute to the development of more effective policies and programs to support Hawai‘i’s agricultural sector.

Table 1 Distribution of Farm Operations by Acreage, Hawai‘i and United States, 2022

Acreage	1.0 – 9.9	10.0 - 49.9	50.0 - 69.9	70.0 - 99.9	100 - 139	140 - 179	180 - 219	220 - 259	260 - 499	500 - 999	1,000 – 1,999	2,000 or more	Total
Hawai‘i													
Number of Farms	4,231	1,679	120	101	82	45	25	20	76	69	47	74	6,569
Percent of Farms (%)	64.4	25.6	1.8	1.5	1.2	0.7	0.4	0.3	1.2	1.1	0.7	1.1	100.0
Total Acreage	15,229	34,134	6,835	8,261	9,446	7,108	4,972	4,803	26,654	46,248	64,067	825,545	1,053,302
Percent of Acreage (%)	1.4	3.2	0.6	0.8	0.9	0.7	0.5	0.5	2.5	4.4	6.1	78.4	100.0
Average Acres per Farm	4	20	57	82	115	158	199	240	351	670	1,363	11,156	160
United States													
Number of Farms	234,592	566,912	130,096	153,239	138,398	108,796	69,602	52,177	166,600	120,456	76,311	83,308	1,900,487
Percent of Farms (%)	12.3	29.8	6.8	8.1	7.3	5.7	3.7	2.7	8.8	6.3	4.0	4.4	100.0
Total Acreage	1,084,341	14,193,479	7,553,962	12,601,546	16,045,194	17,126,924	13,747,397	12,415,492	59,494,534	83,738,842	105,224,602	536,874,535	880,100,848
Percent of Acreage (%)	0.1	1.6	0.9	1.4	1.8	1.9	1.6	1.4	6.8	9.5	12.0	61.0	100.0
Average Acres per Farm	5	25	58	82	116	157	198	238	357	695	1,379	6,444	463

Source: USDA-NASS 2022 Census of Agriculture.

Table 2 Distribution of Farm Operations by Annual Sales Revenue, Hawai‘i and United States, 2022

Annual Sales Revenue	Less than $1,000	$1,000 to $2,499	$2,500 to $4,999	$5,000 to $9,999	$10,000 to $24,999	$25,000 to $49,999	$50,000 to $99,999	$100,000 to $249,999	$250,000 to $499,999	$500,000 to $999,999	$1,000,000 or more	Total
Hawai‘i												
Number of Farms	1,443	729	709	998	1,058	659	394	256	134	79	110	6,569
Percent of Farms (%)	22.0	11.1	10.8	15.2	16.1	10.0	6.0	3.9	2.0	1.2	1.7	100.0
Total Acreage	68,151	8,864	6,196	16,719	42,467	46,172	75,095	153,516	70,716	206,091	359,315	1,053,302
Percent of Acreage (%)	6.5	0.8	0.6	1.6	4.0	4.4	7.1	14.6	6.7	19.6	34.1	100.0
Average Acres per Farm	47	12	9	17	40	70	191	600	528	2,609	3,267	160
United States												
Number of Farms	499,816	179,054	166,149	191,688	222,254	144,047	116,220	122,968	85,266	67,641	105,384	1,900,487
Percent of Farms (%)	26.3	9.4	8.7	10.1	11.7	7.6	6.1	6.5	4.5	3.6	5.5	100.0
Total Acreage	95,499,920	10,495,461	11,534,101	20,183,315	41,777,139	40,318,436	54,830,484	98,296,254	113,031,470	119,039,588	275,094,680	880,100,848
Percent of Acreage (%)	10.9	1.2	1.3	2.3	4.7	4.6	6.2	11.2	12.8	13.5	31.3	100.0
Average Acres per Farm	191	59	69	105	188	280	472	799	1,326	1,760	2,610	463

Source: USDA-NASS 2022 Census of Agriculture.

Table 3 Distribution of Agricultural Land, Hawai‘i, 2022

Group	Crops	Acres Operated
Fruit & Tree Nuts	Macadamias	16,894
Fruit & Tree Nuts	Coffee	9,422
Field Crops	Corn for Seed	2,176
Horticulture	Flowers	1,076
Fruit & Tree Nuts	Bananas	1,039
Horticulture	Nursery Plants	912
Fruit & Tree Nuts	Papayas	828
Field Crops	Hay	820
Fruit & Tree Nuts	Avocados	810
Vegetables	Others	725
Vegetables	Tomatoes	700
Vegetables	Fresh Herbs	677
Field Crops	Taro	557
Vegetables	Sweet Potatoes	539
Fruit & Tree Nuts	Mangoes	497
Fruit & Tree Nuts	Lychees	471
Vegetables	Chinese Cabbage	343
Vegetables	Cucumbers	301
Vegetables	Sweet Corn	274
Horticulture	Foliage	266
Vegetables	Peppers (Bell)	261
Vegetables	Pumpkins	246
Field Crops	Others	225
Fruit & Tree Nuts	Oranges	218
Vegetables	Squash	216
Vegetables	Onions (Dry)	211
Vegetables	Onions (Green)	197
Horticulture	Sod	192
Vegetables	Cabbage (Head)	186
Vegetables	Eggplant	176
Vegetables	Ginger Root	175
Vegetables	Beans	144
Fruit & Tree Nuts	Longan	137
Field Crops	Sunflower Seed	131
Fruit & Tree Nuts	Rambutan	130
Fruit & Tree Nuts	Guavas	129
Vegetables	Greens	110
Fruit & Tree Nuts	Passion Fruit	98
Vegetables	Potatoes	95
Vegetables	Daikon	94
Fruit & Tree Nuts	Tangelos	92
Horticulture	Bedding, Garden	84
Vegetables	Lettuce (Romain)	73
Horticulture	Potted Flowering	71
Vegetables	Lettuce (Head)	66
Horticulture	Other Floriculture	60
Horticulture	Cuttings, Seedlings	58
Vegetables	Broccoli	54
Vegetables	Radishes	50
Vegetables	Okra	47
Vegetables	Parsley	44
Vegetables	Carrots	42
Fruit & Tree Nuts	Grapefruit	42
Vegetables	Beets	36
Fruit & Tree Nuts	Olives	30
Vegetables	Watercress	25
Vegetables	Peppers (Chile)	24
Vegetables	Greens (Mustard)	22
Vegetables	Lima Green Beans	21
Vegetables	Cabbage (Mustard)	20
Fruit & Tree Nuts	Figs	20
Field Crops	Dry Herbs	18
Field Crops	Hemp for Floral	18
Fruit & Tree Nuts	Cherimoyas	17
Horticulture	Flower Seeds	13
Fruit & Tree Nuts	Apples	12
Fruit & Tree Nuts	Kumquats	12
Vegetables	Gourds	11
Vegetables	Spinach	10
Field Crops	Mint (Tea Leaves)	8
Vegetables	Kale	8
Horticulture	Aquatic Plants	6
Horticulture	Bulbs, Corms	6
Vegetables	Asparagus	6
Vegetables	Cauliflower	5
Vegetables	Turnips	5
Vegetables	Peas (Chinese)	4
Fruit & Tree Nuts	Pomegranates	4
Vegetables	Celery	3
Vegetables	Garlic	2
Fruit & Tree Nuts	Blackberries	2
Fruit & Tree Nuts	Nectarines	2
Fruit & Tree Nuts	Peaches	2
Vegetables	Parsnips	1
Vegetables	Peas (Green)	1
Fruit & Tree Nuts	Cherries (Sweet)	1
Fruit & Tree Nuts	Cherries (Tart)	1
Fruit & Tree Nuts	Dates	1
Fruit & Tree Nuts	Kiwifruit	1
Fruit & Tree Nuts	Plum-Apricot	1
Fruit & Tree Nuts	Plums & Prunes	1
Cropland	Acres Operated	43,861
Cropland	(D)[1]	16,517
Cropland	Pastured Only	19,011
Cropland	Other[2]	78,664

Agricultural Land	Acres	%
Cropland	158,053	15.0
Woodland	87,099	8.3
Pastureland	724,083	68.7
Other	84,067	8.0
Total	**1,053,032**	**100.0**

Source: USDA-NASS 2022 Census of Agriculture.

[1] (D) indicates that data has been withheld to avoid disclosing information for individual farms that grow a variety of crops including vegetables, fruits, or tree nuts.

[2] Other includes cropland that were either idle, fallow, or failed in 2022. Additionally, almost half of the other land (36,858 acres) was left idle in Maui County, most of which could be due to the 2016 closure of the Hawaiian Commercial & Sugar Company (HC&S), which removed 38,810 acres of sugarcane production. Mahi Pono acquired the land from HC&S in 2018 and has been working to transform the idle land into a hub of diversified agriculture including citrus, macadamia nuts, coffee, and cattle forage crops.

Table 4 Number of Farms by Area Operated and Industry, Hawai‘i, 2022

Industry / Area Operated (Acres)	1.0 - 9.9	10.0 - 49.9	50.0 - 69.9	70.0 - 99.9	100 - 139	140 - 179	180 - 219	220 - 259	260 - 499	500 - 999	1,000 - 1,999	2,000 or more	Total	%
Fruit and Tree Nut	2,036	533	29	17	23	9	6	6	8	6	5	10	**2,688**	**40.9**
Greenhouse, Nursery, and Floriculture	887	253	13	4	4	-	1	2	-	-	3	2	**1,169**	**17.8**
Beef Cattle and Ranching	182	290	32	44	31	18	12	9	48	56	32	48	**802**	**12.2**
Vegetable and Melon	483	227	18	8	9	2	3	1	7	-	-	3	**761**	**11.6**
Aquaculture and Other Animal	179	104	8	5	3	16	1	2	10	3	1	3	**335**	**5.1**
Sheep and Goat	196	103	5	11	6	-	1	-	1	1	-	2	**326**	**5.0**
Sugarcane, Hay, and All Other Crop	105	120	12	11	3	-	-	-	1	1	2	1	**256**	**3.9**
Poultry and Egg	100	36	-	-	-	-	-	-	1	-	-	-	**137**	**2.1**
Hog and Pig	57	7	-	1	2	-	1	-	-	-	-	-	**68**	**1.0**
Dairy Cattle and Milk	6	3	2	-	-	-	-	-	-	-	1	1	**13**	**0.2**
Oilseed and Grain	-	3	1	-	1	-	-	-	-	2	2	3	**12**	**0.2**
Cattle Feedlots[1]	-	-	-	-	-	-	-	-	-	-	1	1	**2**	**0.0**
Total	**4,231**	**1,679**	**120**	**101**	**82**	**45**	**25**	**20**	**76**	**69**	**47**	**74**	**6,569**	**100.0**
%	**64.4**	**25.6**	**1.8**	**1.5**	**1.2**	**0.7**	**0.4**	**0.3**	**1.2**	**1.1**	**0.7**	**1.1**	**100.0**	

Source: USDA-NASS 2022 Census of Agriculture.

[1] All feedlot operations are believed to have ceased in Hawai‘i. Therefore, reports of cattle feedlots exceeding 1,000 acres could be inaccurate.

Table 5 Farm Income, Expenses, Assets, Net Cash Income, and Profitability by Acreage, Hawai‘i, 2022

Acreage	1.0 – 9.9	10.0 – 49.9	50.0 - 69.9	70.0 - 99.9	100 - 139	140 - 179	180 – 219	220 - 259	260 - 499	500 - 999	1,000 - 1,999	2,000 or more	Hawai‘i	USA
Agricultural Product Sales ($1000)	93,977	151,054	26,124	62,605	13,131	7,982	22,299	5,801	19,668	41,764	34,099	195,271	673,775	543,087,166
Government Payments ($1000)	2,381	1,486	129	729	532	266	117	29	683	1,322	1,731	6,109	15,514	10,436,847
Income from Farm Related Sources ($1000)	10,769	18,427	6,044	1,157	1,468	3,782	1,109	175	1,294	962	674	27,796	73,657	22,257,550
Total Farm Income ($1000)	107,127	170,967	32,297	64,491	15,131	12,030	23,525	6,005	21,645	44,048	36,504	229,176	762,946	575,781,563
Average Total Income per Farm ($)	25,320	101,827	269,142	638,525	184,524	267,333	941,000	300,250	284,803	638,377	776,681	3,096,973	116,143	302,965
Average Total Income per Acre ($)	7,034	5,009	4,725	7,807	1,602	1,692	4,731	1,250	812	952	570	278	724	654
Variable Cash Expenditures ($1000)	82,970	122,104	24,680	28,402	11,116	9,060	13,566	5,146	19,471	40,588	31,976	155,059	544,138	369,136,438
Fixed Cash Expenditures ($1000)	21,341	15,321	1,773	2,911	1,432	484	5,758	1,203	1,555	1,889	1,433	21,025	76,125	55,005,386
Total Farm Production Expenses ($1000)	104,311	137,425	26,453	31,313	12,548	9,544	19,324	6,349	21,026	42,477	33,409	176,084	620,263	424,141,822
Average Production Expenses per Farm ($)	24,654	81,849	220,442	310,030	153,024	212,089	772,960	317,450	276,658	615,609	710,830	2,379,514	94,423	223,175
Average Production Expenses per Acre ($)	6,849	4,026	3,870	3,790	1,328	1,343	3,887	1,322	789	918	521	213	589	482
* Depreciation ($1000)	13,256	16,196	2,319	1,976	841	817	2,005	1,022	5,863	3,853	4,196	20,474	72,818	41,261,941
Value of Land and Buildings ($1000)	3,032,166	2,149,066	381,584	204,347	200,142	128,188	106,047	89,229	295,473	405,738	476,593	4,550,638	12,019,211	3,385,307,085
Value of Machinery and Equipment ($1000)	122,206	107,342	13,520	20,640	10,398	5,678	5,118	4,050	12,469	18,661	20,287	61,170	401,539	312,064,447
Total Asset Value ($1000)	3,154,372	2,256,408	395,104	224,987	210,540	133,866	111,165	93,279	307,942	424,399	496,880	4,611,808	12,420,750	3,697,371,532
Average Total Asset Value per Farm ($1000)	746	1,344	3,293	2,228	2,568	2,975	4,447	4,664	4,052	6,151	10,572	62,322	1,891	1,945
Average Total Asset Value per Acre ($)	207,129	66,104	57,806	27,235	22,289	18,833	22,358	19,421	11,553	9,177	7,756	5,586	11,792	4,201
Total Net Cash Income ($1000)	2,816	33,542	5,844	33,178	2,583	2,486	4,201	(344)	619	1,571	3,095	53,092	142,683	151,639,739
Total Gross Profit ($1000)	24,157	48,863	7,617	36,089	4,015	2,970	9,959	859	2,174	3,460	4,528	74,117	218,808	206,645,125
Total Net Profit ($1000)	(10,440)	17,346	3,525	31,202	1,742	1,669	2,196	(1,366)	(5,244)	(2,282)	(1,101)	32,618	69,865	110,337,798
Average Net Cash Income per Farm ($)	666	19,977	48,700	328,495	31,500	55,244	168,040	(17,200)	8,145	22,768	65,851	717,459	21,721	79,790
Average Gross Profit per Farm ($)	5,710	29,102	63,475	357,317	48,963	66,000	398,360	42,950	28,605	50,145	96,340	1,001,581	33,309	108,733
Average Net Profit per Farm ($)	(2,468)	10,331	29,375	308,931	21,244	37,089	87,840	(68,300)	(69,000)	(33,072)	(23,426)	440,784	10,636	58,079
Average Net Cash Income per Acre ($)	185	983	855	4,016	273	350	845	(72)	23	34	48	64	135	172
Average Gross Profit per Acre ($)	1,586	1,432	1,114	4,369	425	418	2,003	179	82	75	71	90	208	235
Average Net Profit per Acre ($)	(686)	508	516	3,777	184	235	442	(284)	(197)	(49)	(17)	40	66	125
Output-Input Ratio	0.91	1.11	1.12	1.94	1.13	1.16	1.10	0.81	0.80	0.95	0.97	1.17	1.10	1.24
Return on Asset (%)	-0.33	0.77	0.89	13.87	0.83	1.25	1.98	-1.46	-1.70	-0.54	-0.22	0.71	0.56	2.99

Source: USDA-NASS 2022 Census of Agriculture

*Depreciation is recorded as an expense but is not used in the calculation of net cash farm income. Consequently, depreciation does not affect actual cash flow. However, it is added when calculating net profit to account for the long-term costs of using capital assets.

Table 6 Farm Income, Expenses, Assets, Net Cash Income, and Profitability by Annual Sales Revenue, Hawai‘i, 2022

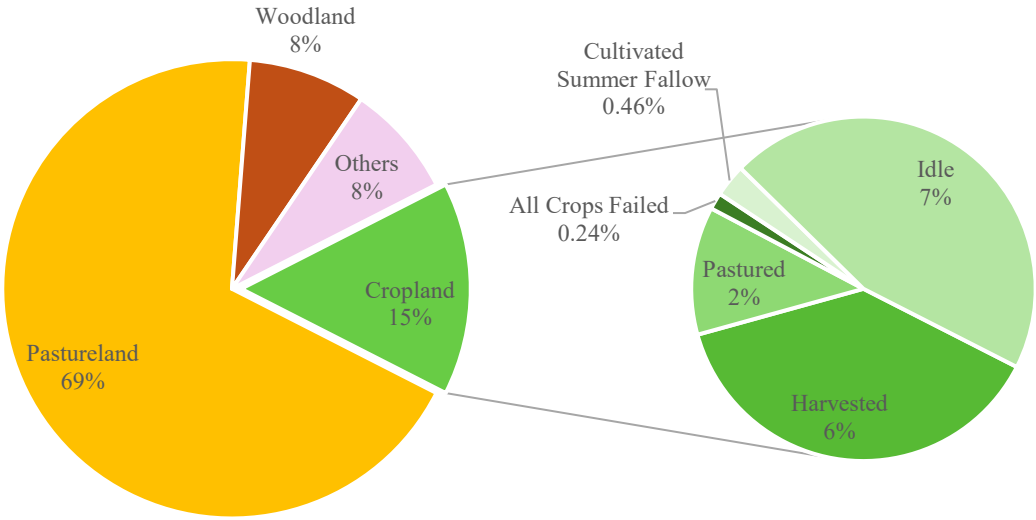
Annual Sales Revenue	Less than $1,000	$1,000 - $2,499	$2,500 - $4,999	$5,000 - $9,999	$10,000 - $24,999	$25,000 - $49,999	$50,000 - $99,999	$100,000 - $249,999	$250,000 - $499,999	$500,000 - $999,999	$1,000,000 or more	Hawai‘i	USA
Agricultural Product Sales ($1000)	326	1,205	2,532	6,978	16,676	22,427	27,365	38,026	45,635	50,392	462,213	673,775	543,087,166
Government Payments ($1000)	2,352	207	160	218	1,187	859	1,162	4,255	1,016	2,181	1,919	15,516	10,436,847
Income from Farm Related Sources ($1000)	3,379	524	642	6,025	6,932	3,027	4,502	7,611	9,488	8,071	23,456	73,657	22,257,550
Total Farm Income ($1000)	6,057	1,936	3,334	13,221	24,795	26,313	33,029	49,892	56,139	60,644	487,588	762,948	575,781,563
Average Total Income per Farm ($)	4,198	2,656	4,702	13,247	23,436	39,929	83,830	194,891	418,948	767,646	4,432,618	116,144	302,965
Average Total Income per Acre ($)	89	218	538	791	584	570	440	325	794	294	1,357	724	654
Variable Cash Expenditures ($1000)	14,803	5,245	5,533	10,731	19,668	21,683	26,633	35,001	35,566	40,545	327,625	543,033	369,136,438
Fixed Cash Expenditures ($1000)	6,719	2,712	3,679	4,270	5,699	5,200	4,293	5,113	3,886	4,555	31,105	77,231	55,005,386
Total Farm Production Expenses ($1000)	21,522	7,957	9,212	15,001	25,367	26,883	30,926	40,114	39,452	45,100	358,730	620,264	424,141,822
Average Production Expenses per Farm ($)	14,915	10,915	12,993	15,031	23,976	40,794	78,492	156,695	294,418	570,886	3,261,182	94,423	223,175
Average Production Expenses per Acre ($)	316	898	1,487	897	597	582	412	261	558	219	998	589	482
* Depreciation ($1000)	3,577	1,593	1,686	4,398	5,274	4,242	3,974	4,983	5,093	3,301	34,698	72,819	41,261,941
Value of Land and Buildings ($1000)	1,787,757	590,676	564,347	960,254	1,128,704	786,224	823,903	900,009	566,343	905,266	3,005,729	12,019,212	3,385,307,085
Value of Machinery and Equipment ($1000)	47,429	20,454	16,256	34,399	41,901	29,807	27,063	26,027	27,238	18,332	112,632	401,538	312,064,447
Total Asset Value ($1000)	1,835,186	611,130	580,603	994,653	1,170,605	816,031	850,966	926,036	593,581	923,598	3,118,361	12,420,750	3,697,371,532
Average Total Asset Value per Farm ($1000)	1,272	838	819	997	1,106	1,238	2,160	3,617	4,430	11,691	28,349	1,891	1,945
Average Total Asset Value per Acre ($)	26,928	68,945	93,706	59,492	27,565	17,674	11,332	6,032	8,394	4,482	8,679	11,792	4,201
Total Net Cash Income ($1000)	(15,465)	(6,021)	(5,878)	(1,780)	(572)	(570)	2,103	9,778	16,687	15,544	128,858	142,684	151,639,739
Total Gross Profit ($1000)	(8,746)	(3,309)	(2,199)	2,490	5,127	4,630	6,396	14,891	20,573	20,099	159,963	219,915	206,645,125
Total Net Profit ($1000)	(19,042)	(7,614)	(7,564)	(6,178)	(5,846)	(4,812)	(1,871)	4,795	11,594	12,243	94,160	69,865	110,337,798
Average Net Cash Income per Farm ($)	(10,717)	(8,259)	(8,291)	(1,784)	(541)	(865)	5,338	38,195	124,530	196,759	1,171,436	21,721	79,790
Average Gross Profit per Farm ($)	(6,061)	(4,539)	(3,102)	2,495	4,846	7,026	16,234	58,168	153,530	254,418	1,454,209	33,478	108,733
Average Net Profit per Farm ($)	(13,196)	(10,444)	(10,669)	(6,190)	(5,526)	(7,302)	(4,749)	18,730	86,522	154,975	856,000	10,636	58,079
Average Net Cash Income per Acre ($)	(227)	(679)	(949)	(106)	(13)	(12)	28	64	236	75	359	135	172
Average Gross Profit per Acre ($)	(128)	(373)	(355)	149	121	100	85	97	291	98	445	209	235
Average Net Profit per Acre ($)	(279)	(859)	(1,221)	(370)	(138)	(104)	(25)	31	164	59	262	66	125
Output-Input Ratio	0.24	0.20	0.31	0.68	0.81	0.85	0.95	1.11	1.26	1.25	1.24	1.10	1.24
Return on Asset (%)	-1.04	-1.25	-1.30	-0.62	-0.50	-0.59	-0.22	0.52	0.19	1.33	3.02	0.56	2.99

Source: USDA-NASS 2022 Census of Agriculture.

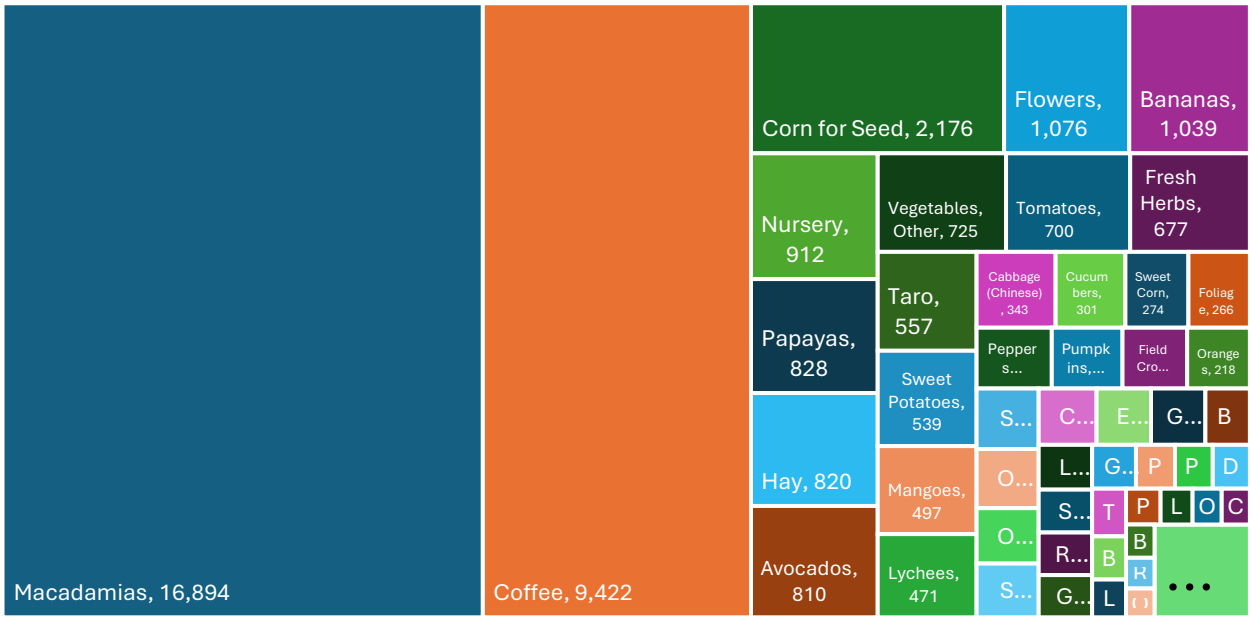
*Depreciation is recorded as an expense but is not used in the calculation of net cash farm income. Consequently, depreciation does not affect actual cash flow. However, it is added when calculating net profit to account for the long-term costs of using capital assets.

Figure 1 Agricultural Land Use, Hawai‘i, 2022

(a) Distribution of Agricultural Land

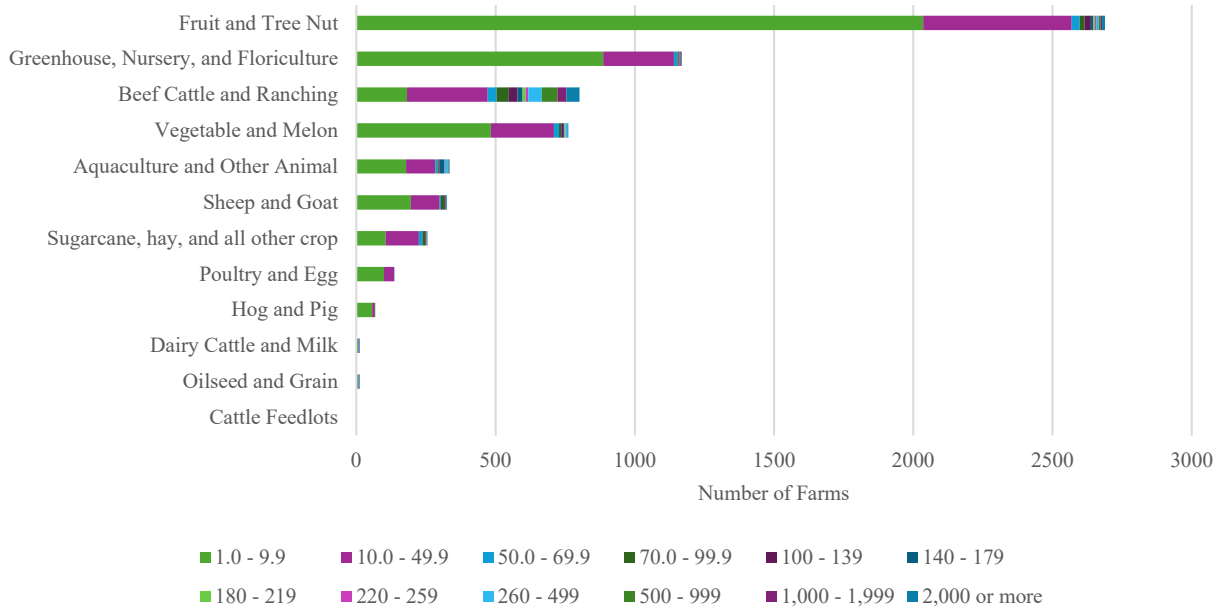


(b) Distribution of Cropland for Vegetables, Fruits, Tree Nuts, and Field & Horticultural Crops in Acres



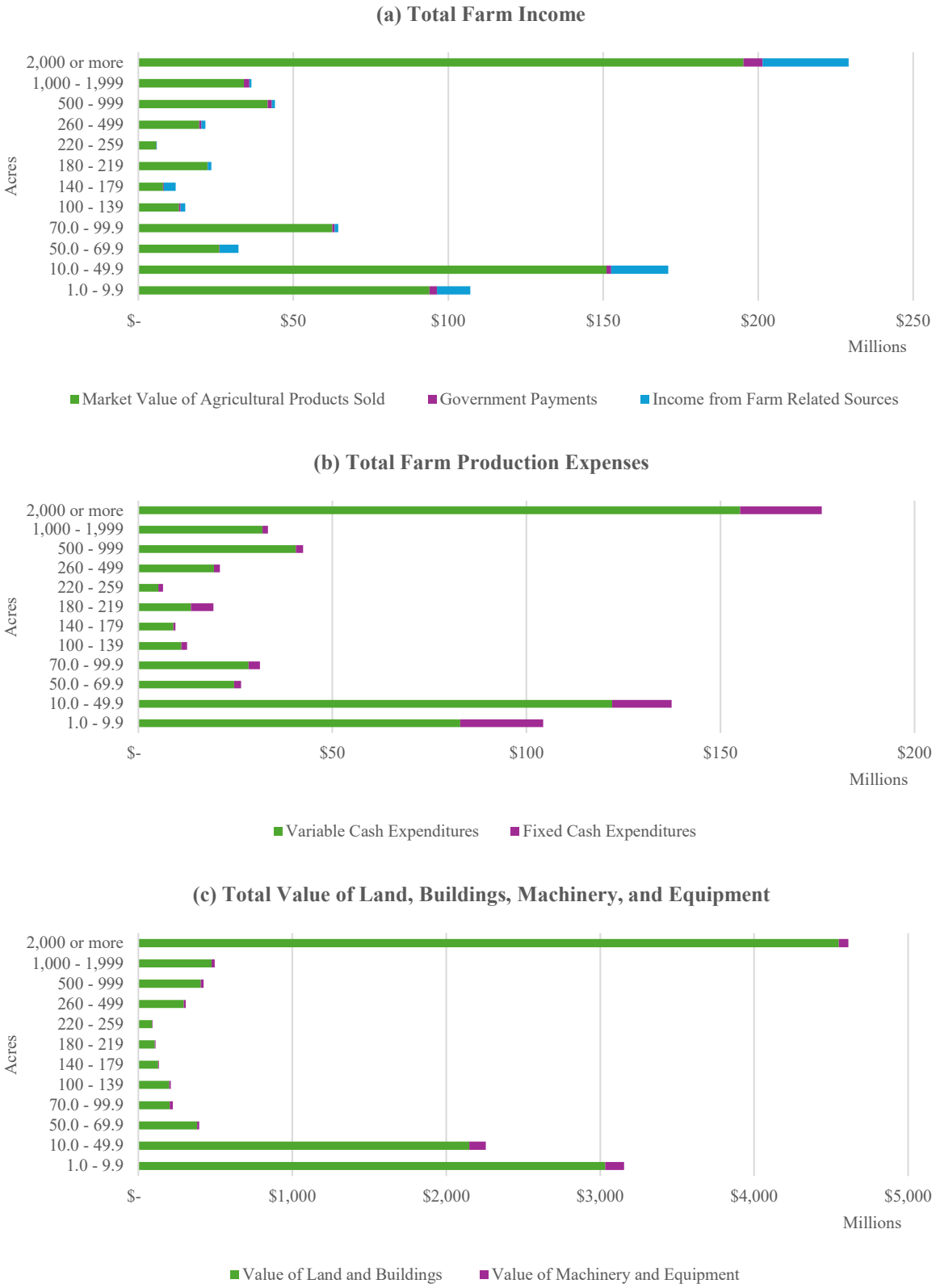
Source: USDA-NASS 2022 Census of Agriculture.

Figure 2 Distribution of Farms by Area Operated and Industry, Hawai‘i, 2022



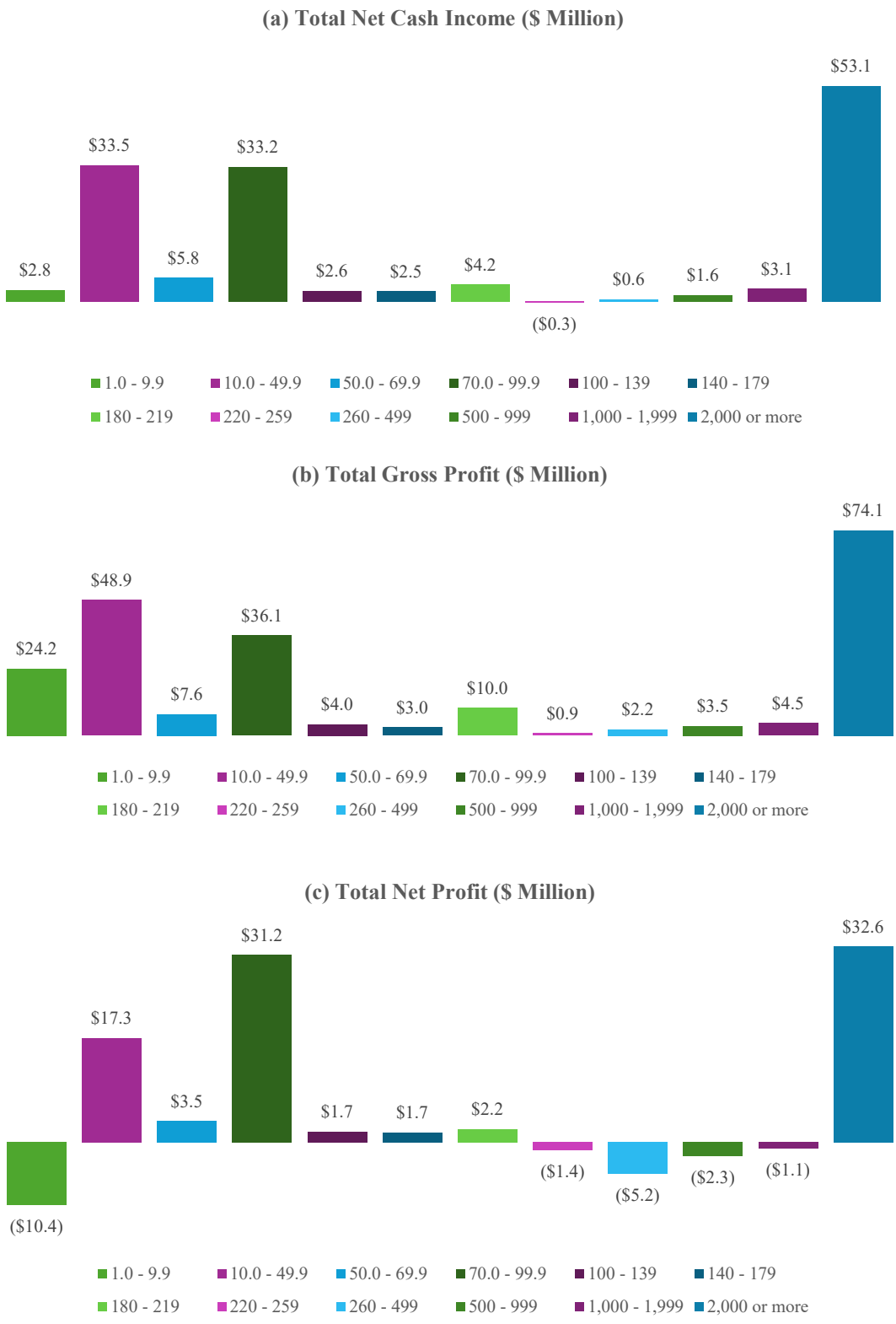
Source: USDA-NASS 2022 Census of Agriculture.

Figure 3 Total Farm Income, Expenditure, and Assets by Acreage, Hawai‘i, 2022



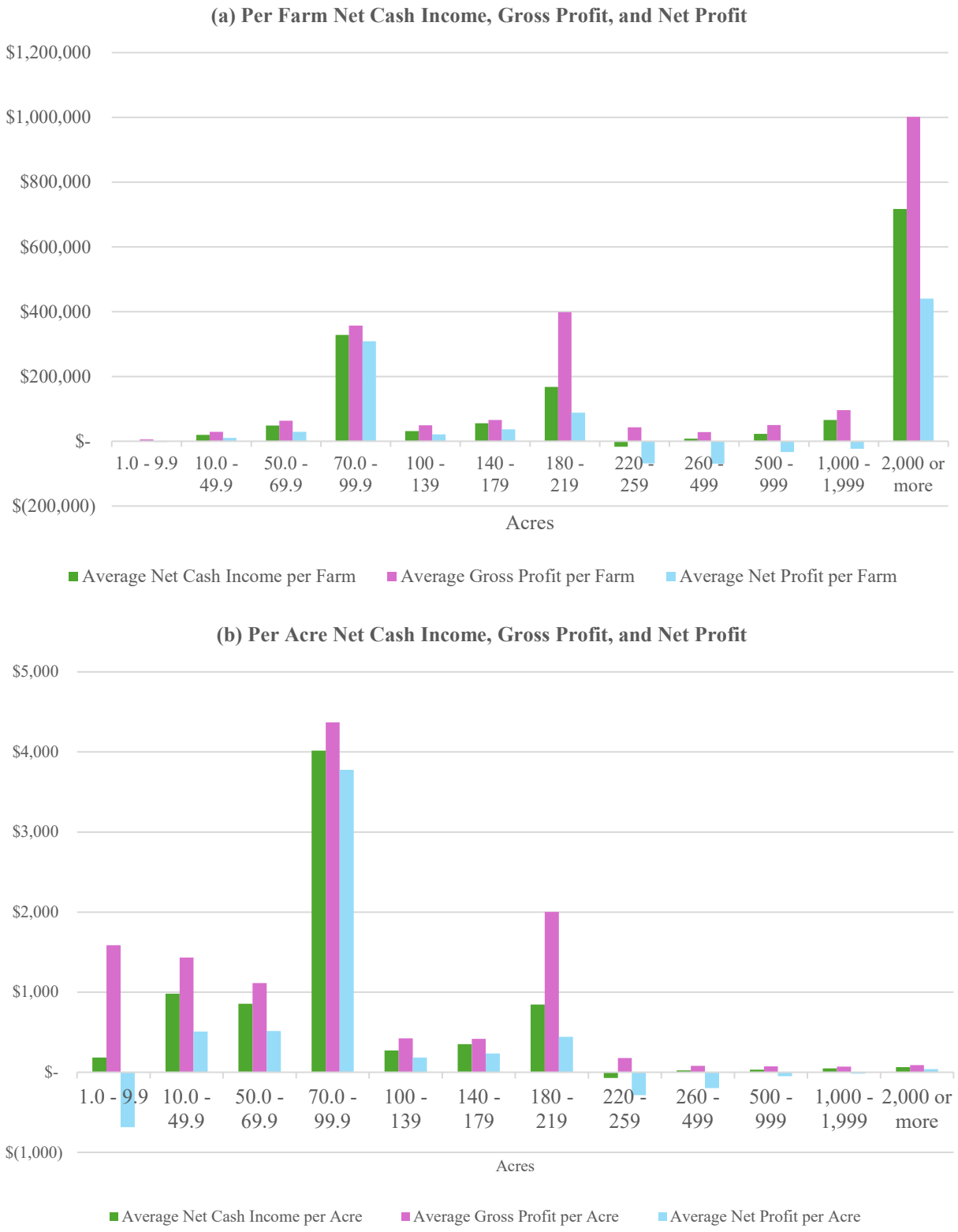
Source: USDA-NASS 2022 Census of Agriculture.

Figure 4 Total Profitability by Acreage, Hawai‘i, 2022



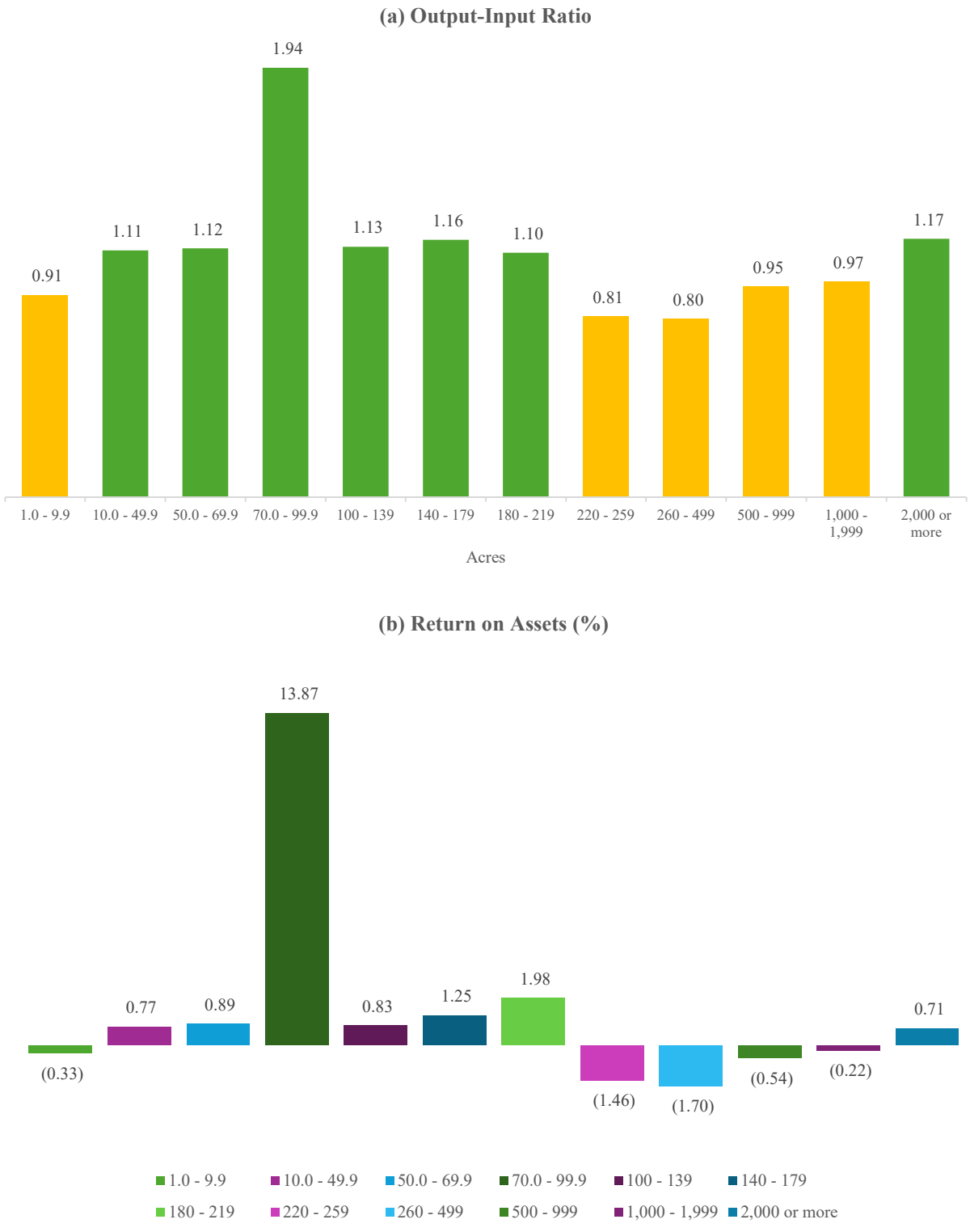
Source: USDA-NASS 2022 Census of Agriculture.

Figure 5 Average Profitability by Acreage, Hawai‘i, 2022



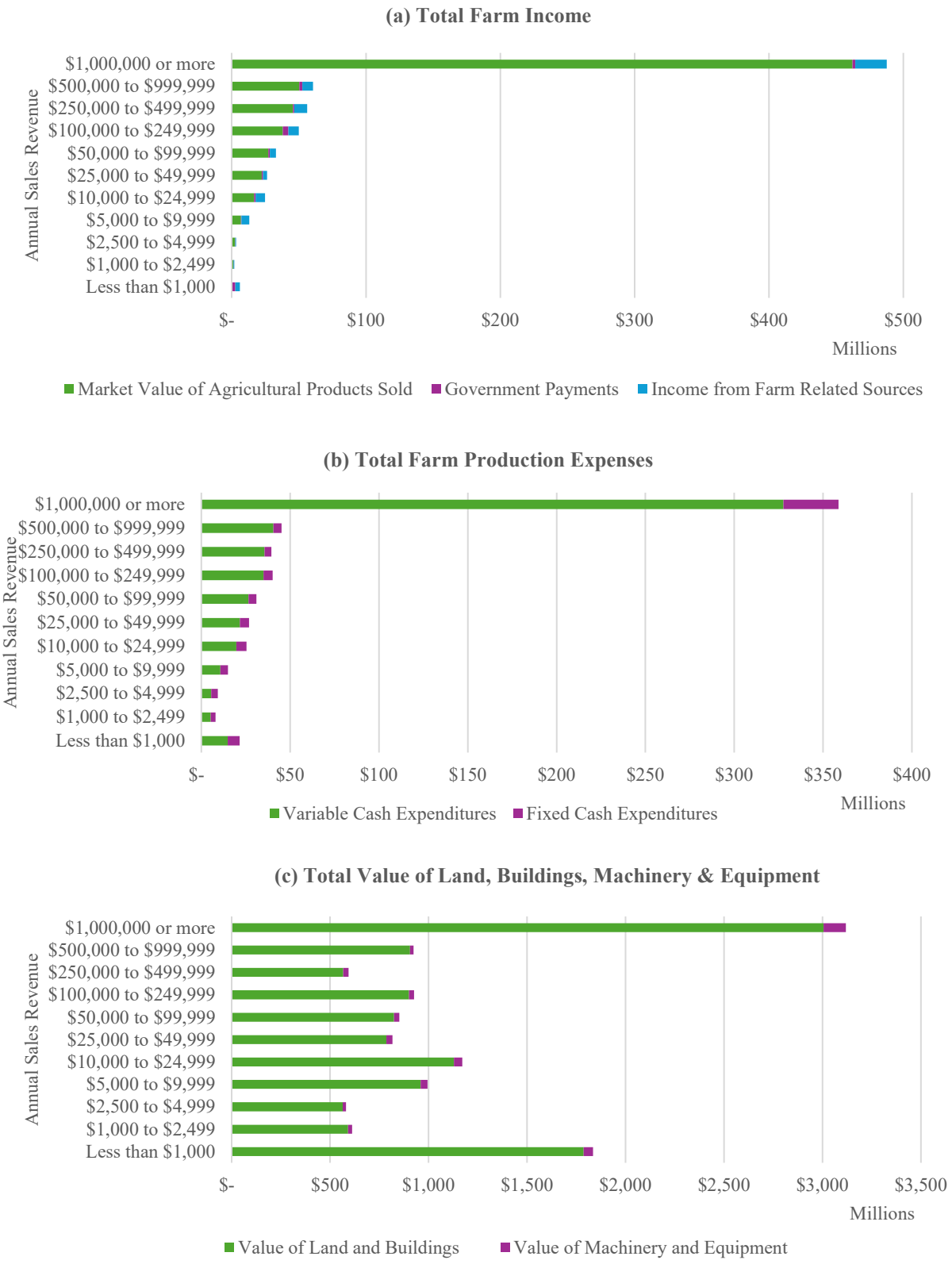
Source: USDA-NASS 2022 Census of Agriculture.

Figure 6 Output-Input Ratio and Return on Assets by Acreage, Hawai‘i, 2022



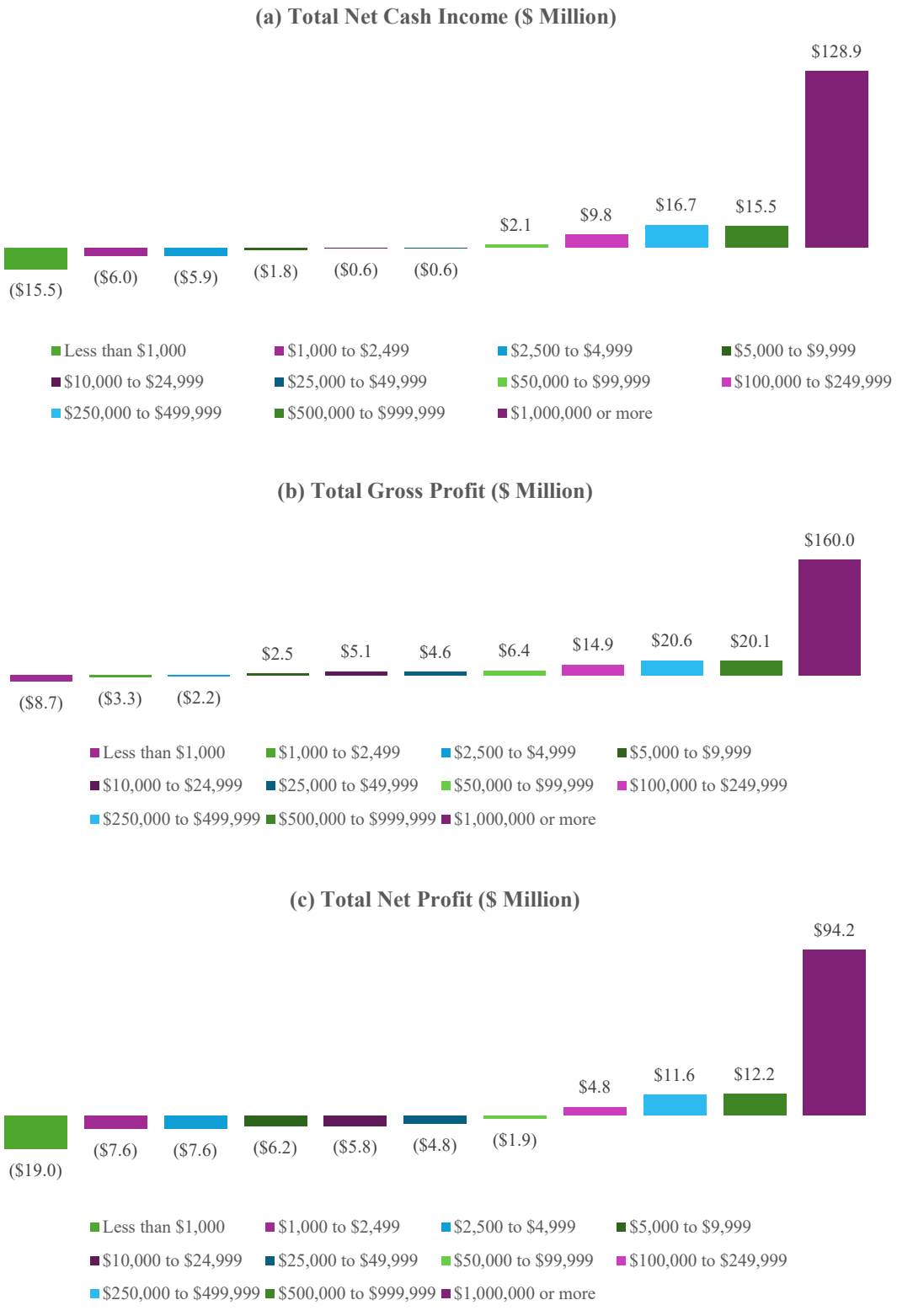
Source: USDA-NASS 2022 Census of Agriculture.

Figure 7 Total Farm Income, Expenditure, and Assets by Annual Sales Revenue, Hawai‘i, 2022



Source: USDA-NASS 2022 Census of Agriculture.

Figure 8 Total Profitability by Annual Sales Revenue, Hawai‘i, 2022



Source: USDA-NASS 2022 Census of Agriculture.

Figure 9 Average Profitability by Annual Sales Revenue, Hawai‘i, 2022

Source: USDA-NASS 2022 Census of Agriculture.

Figure 10 Output-Input Ratio and Return on Assets by Annual Sales Revenue, Hawai‘i, 2022

Source: USDA-NASS 2022 Census of Agriculture.