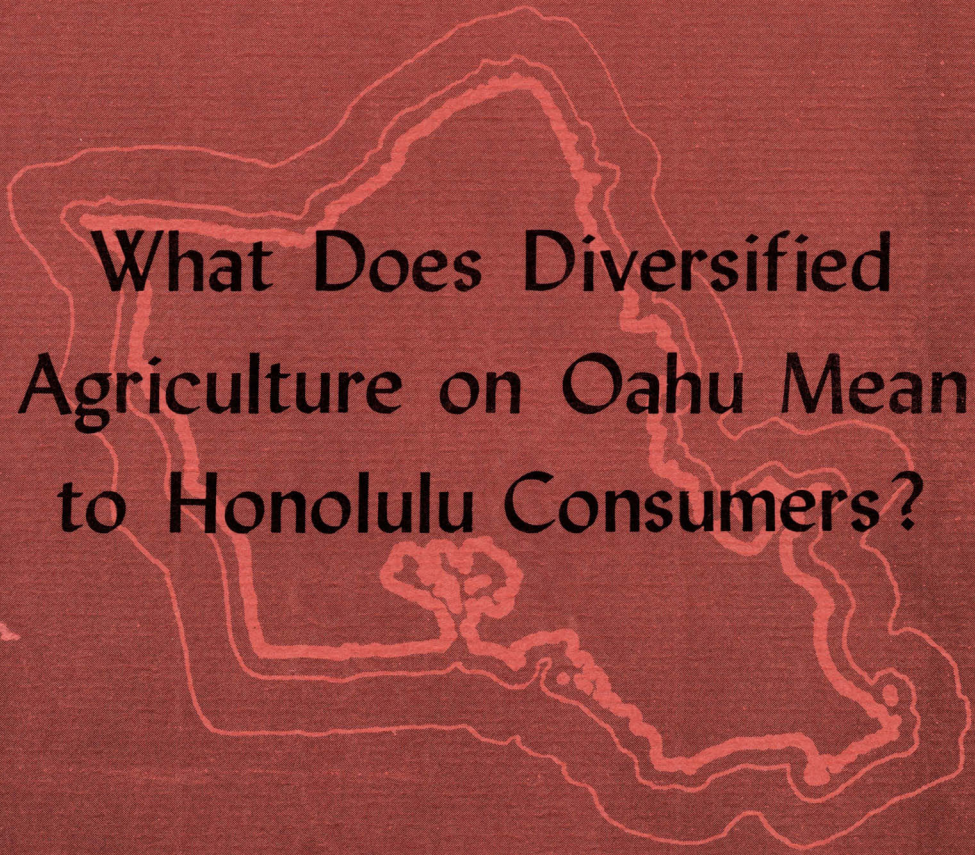

What Does Diversified Agriculture on Oahu Mean to Honolulu Consumers?

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I shall try to answer the question "What does diversified agriculture on Oahu mean to Honolulu consumers?" by showing the present importance of Oahu's diversified agriculture and by pointing out the effects of shifting it from Oahu to the outer islands. The effect on the quality of agricultural products, on the cost of production, and consequently on the price consumers have to pay will be discussed. In addition, the part that Oahu's diversified agriculture plays in strengthening Oahu's economy in times of emergency will be pointed out.

The Importance of Diversified Agriculture on Oahu

By diversified agriculture is meant here the production of all agricultural products other than the two plantation products, sugar and pineapple.

In 1959, total marketings of diversified agricultural products produced in the state amounted to $42.6 million. Of this, Oahu farmers marketed $21.7 million or 51 percent and outer-island farmers $20.9 million or 49 percent (Table 1).

The importance of diversified agricultural production on Oahu varied greatly by commodities (Figure 1 and Table 2). In 1959 Oahu farmers produced 53 percent of the value of fruits, 46 percent of the value of vegetables, and 27 percent of the value of taro in the state.

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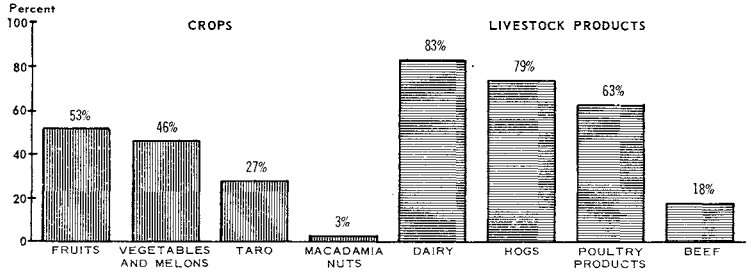
* *Talk presented on November 21, 1960, at the University of Hawaii during the 6th Annual National Farm/City Week.*

Table 1. Value of diversified agricultural marketings on Oahu and the outer islands in 1959.

Item	Oahu marketings		Outside islands marketings		Total state marketings
	1,000 DOLLARS	PERCENT OF STATE TOTAL	1,000 DOLLARS	PERCENT OF STATE TOTAL	1,000 DOLLARS
Vegetables and fruits	3,365	47	3,782	53	7,147
Other crop products	176	4	3,802	96	3,978
All diversified crops	3,541	32	7,584	68	11,125
Livestock products	18,140	58	13,345	42	31,485
All crop and livestock products	21,681	51	20,929	49	42,610

Source: *Statistics of Hawaiian Agriculture, 1959*, Agr. Econ. Rpt. 46, University of Hawaii, June 1960.

Figure 1. Oahu's share of the State's total diversified marketings in 1959.



Among livestock products, Oahu farmers produced 83 percent of the value of dairy products, 79 percent of the value of hogs, 63 percent of the value of poultry products, and 18 percent of the value of beef in the state. Statistics on some products such as flowers and ornamental plants were not available.

Table 2. Itemized table of diversified agricultural marketings on Oahu and on the outer islands in 1959.

Item	Oahu marketings		Outside islands marketings		Total state marketings
	1,000 DOLLARS	PERCENT OF STATE TOTAL	1,000 DOLLARS	PERCENT OF STATE TOTAL	1,000 DOLLARS
Fruits and Vegetables					
Vegetables and melons	2,560	46	3,062	54	5,622
Fruits	805	53	720	47	1,525
Miscellaneous Crops					
Coffee, parchment	-----	0	2,961	100	2,961
Taro, for processing	163	27	430	73	593
Macadamia nuts, in shell	13	3	371	97	384
Rice, milled	-----	0	40	100	40
Livestock Products					
Dairy, meat, and milk	8,630	83	1,830	17	10,460
Beef	1,703	18	7,900	82	9,603
Chickens and eggs	4,859	63	2,796	37	7,655
Hogs	2,944	79	787	21	3,731
Honey and beeswax	4	11	32	89	36

Source: *Statistics of Hawaiian Agriculture, 1959*, Agr. Econ. Rpt. 46, University of Hawaii, June 1960.

Effects of Shifting Diversified Agriculture from Oahu to the Outer Islands

Let us first consider the effects on produce quality, cost, and price of transferring crop production, particularly vegetable growing, from Oahu to the outer islands. We are not concerned here with products which are primarily imported, and the prices of which are mainly determined by the landed costs of imported products. We are concerned with products which are either not imported or with island products which are preferred by Honolulu consumers because of higher quality, lower price, or both.

VEGETABLES

Some vegetables deteriorate in quality very quickly after harvesting, particularly if they are not kept cool in transit. For example, fresh sweet corn loses much of its flavor within 48 hours after picking. Leafy crops such as Manoa lettuce, pak choi, spinach, or vine-ripened tomatoes suffer severely during long periods of transportation and unfavorable temperature conditions. On the other hand, other vegetables such as head lettuce or head cabbage are much less perishable.

The highly perishable vegetables should reach the consumer's hands as quickly as possible. Transporting Oahu-raised produce to market rarely takes more than an hour or two. In contrast, for a farmer located in Kamuela, Hawaii, transporting produce to Kawaihae harbor alone may equal the total transportation time of the Oahu producer. The barge trip from Kawaihae to Honolulu averages about 15 hours. With waiting, loading and unloading on the docks, and with cartage from Honolulu harbor to the wholesaler, the total transportation time is longer. During much of this time, the produce may be exposed to unfavorably high temperatures.

Frequency of interisland sailings affects quality. For example, barges are scheduled only two times a week

between Kawaihae or Kona and Honolulu. Some crops such as snap beans have to be picked more frequently than twice a week during the peak of the harvest season; otherwise the beans get too old. Other crops such as tomatoes and papayas may have to be picked so green that they will never reach their potential quality.

The farther away produce is grown, the more it costs to transport it to market. Let us suppose that the above-mentioned Oahu and Kamuela farmers both grow lettuce. The cost of shipping lettuce from the farm to Honolulu is about 1 cent per pound higher for the Kamuela than for the Oahu grower. Of this added total, .6 cent represents the barge fare for unrefrigerated produce and .4 cent is for truck transportation in Honolulu.

Let us assume conservatively that both farmers produce in a year two and one-half crops of lettuce of 8,500 pounds each per acre or a total of about 21,000 pounds. The additional shipping cost of the Kamuela producer is thus $210 per acre pre year (21,000 x 1.0 cent per pound).

More spoilage occurs in shipping produce from an outer-island than from an Oahu farm to the Honolulu market. The outer-island farmer thus may have greater spoilage costs as well as some additional expenses for sorting and repacking his produce in Honolulu.

Vacuum cooling near the farm and refrigeration in transit could help greatly in improving the quality of some of the produce arriving in Honolulu from the outer islands. However, no vacuum cooling facility now exists on the outer islands. Refrigerated van service was temporarily available during the summer of 1960 and will probably be reestablished soon. A refrigerated van was loaded at the farm or at the local packinghouse and shipped via barge directly to the Honolulu wholesaler. Shipping a pound of lettuce from Kamuela to Honolulu by refrigerated van cost 1.65 cents per pound. Shipping an annual crop of 21,000 pounds of lettuce under refrigera-

tion from an acre in Kamuela to Honolulu cost $346 (Figure 2).

Shipping by air is another way of trying to overcome the disadvantages of distance between the outer-island farm and the Honolulu market. Air freight charges for vegetables from Kamuela to Honolulu for loads of more than 500 pounds were 2.75 cents per pound in 1960. With 21,000 pounds of lettuce per acre, the outer-island grower would have $577 higher transportation costs to market than the Oahu grower.

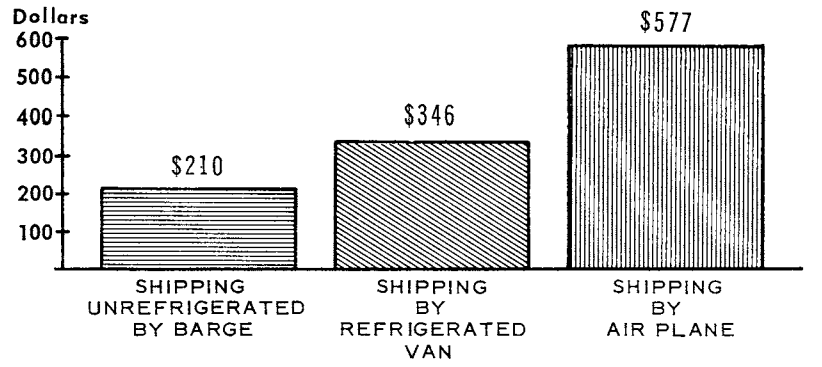
If state-subsidized ferry transportation should come into existence, this would probably reduce the shipping costs of outer-island farmers. However, the farmer probably would still have to pay a large share of these shipping costs such as operating the refrigerated vans. Infrequency of sailings may also remain a problem.

Some material costs of outer-island farmers are higher than those of Oahu farmers. For example, an Oahu farmer may be able to pick up used packing crates for his vegetables free of charge or at low cost from the retailer, whom he supplies with produce. The Kamuela farmer, however, may have to pay a charge to his Honolulu wholesaler for collecting used crates and for returning them to him. He also has to pay a charge of from 4.5 to 8 cents per cubic foot for shipping the empty crates by barge from Honolulu to Kawaihae.

The Oahu farmer may market his produce directly to the retailer. The outer-island farmer, because of the distance involved, usually has to ship his produce to a wholesaler who customarily charges a 20-percent commission fee for his services.

So far, we have discussed the cost and quality advantages which Oahu farmers have over outer-island farmers. On the other hand, outer-island growers have cost advantages over Oahu farmers. Their land, water, and labor costs are often lower than those of Oahu farm-

Figure 2. Additional shipping cost of a lettuce producer in Kamuela, Hawaii, over a producer on Oahu per acre per year in 1960.



ers. Lower land costs may enable them to use cost-saving practices such as crop rotation and cover cropping and thus to reduce their expenditures for fertilizer and pesticides. They may also be able to cut their costs by larger scale, mechanized operations.

In summary, some vegetables, particularly those which are highly perishable and do best in market gardens, are more profitably grown on Oahu for Honolulu consumption. With conditions as they are now, shifting production of perishable produce from Oahu to the outer islands would probably result in higher prices and lower quality to Honolulu consumers. Hardy vegetables which stand up well during transportation and which can be grown on larger scale, mechanized farms can be grown competitively on the outer islands. It would be immaterial to Honolulu consumers whether they were produced on Oahu or on the outer islands.

MILK

All fresh milk consumed in Honolulu is presently produced on Oahu except for occasional inshipments when there is a surplus on an outer island. Oahu's dairymen produce milk on their feedlot-type dairies cheaper than

most dairymen do on the outer islands. They have developed efficient production methods and use mostly modern, newly built and equipped farm plants. They can buy imported feed cheaper than outer-island dairymen from the Honolulu bulk unloading plant--the only one in the islands. Finally, they have a short haul from farm to market.

Producing milk for Honolulu on the outer islands would mean additional expenses for shipping the milk by barge to Oahu and for returning the empty shipping container to the island of origin.

With cheaper land available on the outer islands, part of the imported concentrate feed could be replaced with grass. However, it is questionable whether the reduction in feed cost per cow would equal the increases shipping cost. This would be particularly doubtful if substituting grass for concentrate should materially reduce milk production per cow. A subsidized ferry system might, of course, greatly improve the competitive position of dairymen on the outer islands in supplying fresh milk to Honolulu. Under present conditions, at any rate, shifting milk production to the outer islands might well mean higher prices to Honolulu consumers.

EGGS

The price of eggs in Honolulu has up to now been determined primarily by the landed cost of imported eggs. Island eggs have generally enjoyed a price premium in Honolulu over imported eggs.*

The majority of island eggs sold in Honolulu are produced on Oahu; the rest is shipped in from the outer islands, mainly Hawaii. Production costs for eggs are about the same on Oahu and Hawaii for the same size of farm. However, Hawaii egg producers pay almost twice as much to market their eggs in Honolulu than do their Oahu competitors, because of their greater distance from

* See J. A. Mollett, *Egg Production in Hawaii: Some Economic Aspects*, HAES Agr. Econ. Rpt. 47, 1960.

the Honolulu market. This reduces their profit margin substantially below that of Oahu egg producers. Shifting Oahu egg production to the outer islands might thus bring higher island egg prices to Honolulu consumers.

PORK

Island hot soft pork also commands a premium price over imported pork because many Honolulu consumers prefer it. Hot pork means pork which has not been refrigerated. Soft pork is fat pork produced primarily by feeding garbage to hogs. Almost all island pork consumed in Honolulu is produced on Oahu because Honolulu with its large population is the major source of garbage.

If Oahu hog producers had to relocate on the outer islands, their feed costs would increase. Shipping the live pigs or the pork to Honolulu would be an additional cost. If cost of production other than feed remained unchanged, the retail price consumers pay for island pork would have to rise to cover the additional transportation charges.

BEEF

Few grass-fattened beef animals are raised on Oahu. They are produced mostly on the outer islands. There are, however, some feedlot operations on Oahu, where feeder cattle are being fattened. Since most of the feeder animals are shipped from the outer islands anyway, relocation of these feedlot operations from Oahu to the outer islands is not expected to materially change the price of island-fed beef to Honolulu consumers. At present, the major cost advantage of Oahu feedlots is the availability of cheaper imported concentrate feed resulting from the bulk unloading plant for feed here.

Other Factors

Now let us look at the importance of diversified agriculture on Oahu to the income level of Honolulu residents. Much of the $21.7 million gross annual income of Oahu's farmers circulate several times through the island's

economy. Shifting diversified agriculture to the outer islands would mean that Oahu's inhabitants would lose some of this income.

The existence of diversified agricultural production on Oahu during a period of emergency such as a maritime strike, a lockout, or a war may become important to the people of Honolulu. When no emergency threatens such as at present, these considerations may seem of little consequence to the average person in Honolulu. However, particularly if Oahu should be cut off during a war from outside sources of food, the existence of a food-producing industry may become a matter of life and death to the island's population.

We should realize that diversified agriculture on Oahu requires comparatively little land. Present vegetable production could be continued on 600 to 1,000 acres, fruit production on 1,100 acres, and dairy feedlots excluding grass production on 300 to 400 acres. Even large poultry and hog farms require only a few acres each. Other crops such as flowers and nurseries also use land intensively and require relatively little of it. Much land on Oahu today is still used for less valuable purposes than producing diversified agricultural products.

Summary

Production of some diversified agricultural products on Oahu results in cheaper or better products or both to Honolulu consumers than would production on the outer islands. Other products can just as well be produced on the outer islands as far as Honolulu consumers are concerned. The people of Honolulu should consider also other factors than quality and price in deciding where diversified agricultural products destined for their consumption should be produced. Among these are the effect diversified agriculture has on total income level and the availability of food in case of emergency or war.