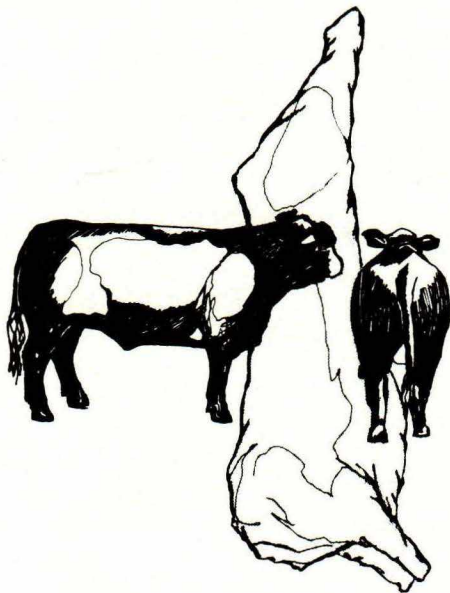


**A DESCRIPTION
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OF THE HAWAII BEEF CATTLE INDUSTRY**

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A DESCRIPTION OF THE MARKET ORGANIZATION
OF THE HAWAII BEEF CATTLE INDUSTRY

by

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even retail cuts and processed products? Should Hawaii be exporting cattle, feeder cattle and calves to the Mainland or other countries such as Japan?

All of the above alternatives are intricately dependent upon the institutions and institutional arrangements in the marketing sector of the cattle industry. In fact, any decision made by the industry as to alternative courses of action must be made with full knowledge of its affect on and how it is affected by the marketing system. Consequently, it is imperative that, prior to the investigation and evaluation of alternative industry courses of action, the industry must have complete knowledge of the existing livestock marketing system and available options to this system.

The objective of this project is to describe the beef marketing system in Hawaii. This requires tracing the major sources of beef supplies (local production, domestic imports, and foreign imports) through the marketing system. It also requires the identification of prevailing marketing agreements and contracts between producers, feeders, slaughter-rendering plants, and retailers.

In order to accomplish the objective of this project, personal interviews were conducted with ranchers, feedlot operators, personnel in slaughter plants and processing plants, meat importers, and retail and military meat buyers. In addition, questionnaires were mailed to ranches throughout the State. This report presents the findings of this survey of the Hawaiian cattle industry.

The report is divided into four major sections: 1) Beef Production which examines the trends in the production of cattle in Hawaii over the past 15 years -- it was felt that it was important to "set the stage" for the study of the marketing of livestock in Hawaii by first taking an in-depth look at the production phase of the total industry; 2) Market Supply which examines the source of supply of beef in Hawaii over the past 15 years; 3) Industry Market Structure which describes the current market structure in the cattle industry by dividing the industry into four segments--ranching, feedlots, slaughter/processing, and wholesaling/retailing and then describing each segment; and 4) Summary.

BEEF PRODUCTION IN HAWAII

The Hawaii cattle industry has had an interesting history. The first cattle known to be in the Hawaiian Islands were shipped from California in 1793 and apparently were of the Spanish longhorn type. By 1846 there were approximately 35,000 cattle in Hawaii, about 10,000 of these cattle were tame and 25,000 wild. The number of cattle had grown to 145,000 by 1910, which was the first year that numbers of cattle were identified by individual islands. The island of

Hawaii had 81,900 head (56 percent of the total); Maui and Molokai had 32,800 head (23 percent of the total); Oahu and 20,300 head (14 percent of the total); and Kauai and Niihau had 10,100 head (7 percent of the total).

Fifty years later (1960) the cattle industry in Hawaii had grown to 181,000 head. By 1965, the cattle and calves inventory in the state had grown to 223,000 head. Since 1965, however, the numbers of cattle in Hawaii have remained relatively stable. Table 1 shows the annual inventory of cattle and calves for the State and for each island for the period 1965-1981.

It is interesting to note that the percentage of total cattle accounted for by each of the islands has not significantly changed over the 70-year period from 1910 to 1980. In 1980, the island of Hawaii had 58 percent of the cattle and calves; Maui and Molokai had 21 percent; Oahu had 13 percent; and Kauai and Niihau had 8 percent. Thus the growth (and more recently the lack of growth) of the cattle numbers within the state has been relatively uniform on each of the individual islands (Figure 1).

During the past 17 years, the inventory of cattle and calves in Hawaii has remained relatively stable, with perhaps a slight decline. During the three-year period 1965-67, Hawaii had an average inventory of 231,000 head of cattle and calves. By the three-year period 1979-81, the average inventory had declined by 6 percent to 216,000 head. This decline occurred on each island except Molokai/Lanai which increased its inventory by 8.1 percent. The cattle and calves inventory on the island of Hawaii declined by 7.9 percent; 9.2 percent on Maui; and 1.6 percent on Oahu and Kauai/Niihau.

Table 2 shows the cattle and calves inventory and the disposition of these cattle and calves for the state between the years 1972 and 1980 (data prior to 1972 are not available). Again it is seen that the industry has remained relatively stable in calf crop, inshipments, farm slaughter, and in marketing except during drought years which brought heavy death losses.

Another significant factor in the growth pattern of the Hawaii cattle industry is the trend in the beef cow herd in the state (Table 3). If the two three-year periods, 1965-67 and 1979-81 are again compared, it can be seen that cow numbers in the state have declined slightly--from an average of 86,300 head in the 1965-67 period to 80,300 in the 1979-81 period, or a decline of about 7 percent. Again, this decline occurred on each island except Molokai/Lanai which increased its cow herd by about 500 head, or 15 percent. The average of the cow herd between these two periods declined on the island of Hawaii by 7 percent (4,000 cows); 13 percent on Kauai/Niihau (1,000 cows); 2 percent on Maui (300 cows); and 37 percent on Oahu (1,000 cows).

TABLE 1. CATTLE AND CALVES: JANUARY 1 INVENTORY, BY ISLANDS, STATE OF HAWAII, 1965-1981

Year	State	Hawaii	Kauai/ Niihau	Maui	Molokai/ Lanai	Oahu
			(1,000 hd)			
1965	223	128.0	18.5	41.9	5.6	28.6
1966	233	133.8	18.7	41.9	6.1	32.5
1967	236	137.7	18.4	39.7	7.0	33.2
1968	241	139.6	19.6	40.6	7.9	33.7
1969	238	136.8	18.7	41.4	7.2	34.2
1970	246	144.6	17.4	44.3	5.4	34.0
1971	249	142.3	17.7	47.6	6.9	34.6
1972	245	142.0	16.0	45.0	5.5	36.8
1973	242	140.5	17.3	44.3	4.9	35.0
1974	240	133.0	22.2	41.8	7.0	36.0
1975	250	141.2	22.5	43.0	7.8	35.5
1976	245	139.6	20.2	42.7	6.1	36.4
1977	240	135.7	20.5	43.5	7.0	33.3
1978	234	128.6	21.1	41.4	7.1	35.8
1979	215	119.9	18.0	37.5	6.9	32.7
1980	213	121.0	18.1	36.0	6.5	31.4
1981	220	127.2	18.4	38.7	7.2	28.5

Source: Hawaii Agricultural Reporting Service

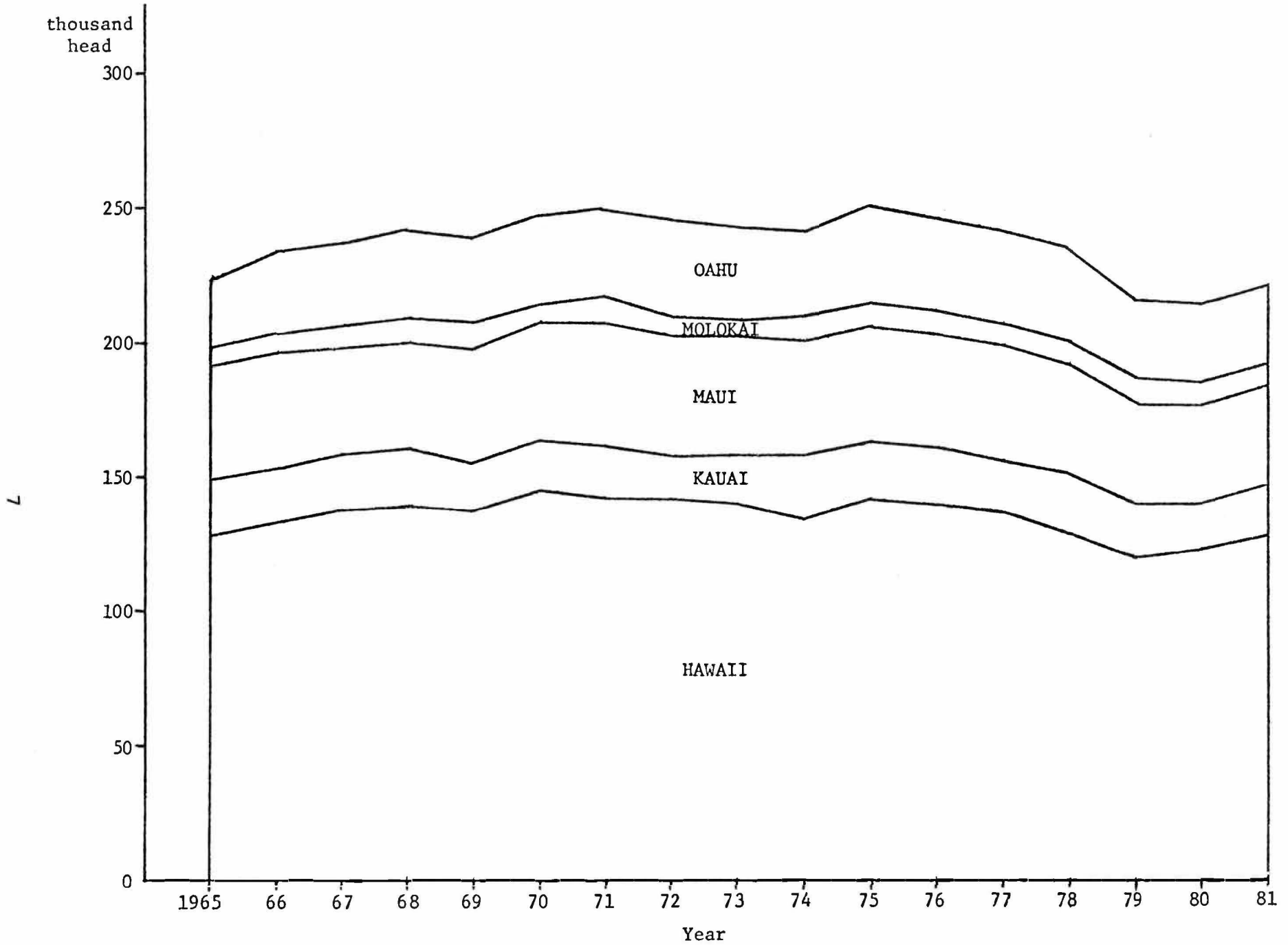


Figure 1. Cattle and Calves: January 1 Inventory, By Islands, State of Hawaii, 1965-1981

TABLE 2. CATTLE AND CALVES: INVENTORY AND DISPOSITION, STATE OF HAWAII, 1972-1980

Year	Beginning Inventory January 1	Calf Crop	In-shipments	Cattle & Calves Marketings	Farm Slaughter	Deaths	Inventory January 1 following year
1972	245	72	2	67	1	9	242
1973	242	72	2	64	1	11	240
1974	240	75	1	54	1	11	250
1975	250	73	2	54	2	24	245
1976	245	74	1	62	2	16	240
1977	240	74	1	65	1	15	234
1978	234	64	1	69	2	13	215
1979	215	66	1	60	1	8	213
1980	213	72	*	55	1	9	220

*Less than 50.

Source: Hawaii Agricultural Reporting Service.

TABLE 3. BEEF COW INVENTORY, JANUARY 1, BY ISLANDS, STATE OF HAWAII, 1965-1980

Year	State	Hawaii	Kauai (1000 head)	Maui	Molokai	Oahu
1965	85	56.9	7.3	15.1	3.0	2.7
1966	87	56.9	7.9	16.2	3.4	2.6
1967	87	57.4	7.6	15.5	3.6	2.9
1968	89	59.0	8.0	16.1	3.9	2.2
1969	92	62.0	7.2	17.0	4.0	2.0
1970	90	59.8	6.4	18.3	3.1	2.0
1971	89	56.4	6.8	19.4	3.0	3.4
1972	89	58.0	6.1	17.6	3.0	4.3
1973	90	58.9	6.7	17.4	3.3	3.7
1974	90	58.5	7.4	17.4	3.8	2.6
1975	93	59.1	8.6	17.6	4.1	3.3
1976	89	55.5	7.9	18.5	3.5	3.6
1977	85	52.4	7.7	18.4	3.8	2.7
1978	80	49.3	7.7	16.7	3.7	2.6
1979	78	50.6	6.1	15.6	3.9	1.8
1980	83	56.4	6.4	15.3	3.6	1.7
1981	80	52.2	7.4	15.1	3.8	1.7

Source: Hawaii Agricultural Reporting Service.

Accompanying the above changes has been a decline in the number of ranches (Table 4) and an increase in the average size of ranches producing cattle in the State. In 1965, Hawaii had 1,500 ranches which had a total inventory of 223,000 head of cattle and calves on January 1 (an average size of 149 head). By January 1, 1981, Hawaii had 800 ranches which had a total inventory of 220,000 head (an average size of 275 head). This trend occurred on each of the islands, although not all at the same rate. For example, between 1965 and 1981 the number of ranches on the island of Hawaii declined by 240 (40 percent) and the average size increased by 140 head (66 percent) to 353 head per ranch; on Kauai, the number of ranches declined by 70 (47 percent) and the average size increased by 39 head (46 percent) to 123 head; on Maui, the number of ranches declined by 180 (49 percent) and the average size increased by 91 head (80 percent) to 204 head; on Molokai, the number of ranches declined by 10 (33 percent) and the average size increased by 173 head (93 percent) to 360 head; and on Oahu, the number of ranches declined by 200 (71 percent) and the average size increased by 254 head (249 percent) to 356 head.

The end result of production is the marketing of cattle and calves. Table 5 presents the number, liveweight, farm price, and value of sales of the cattle and calves marketed from ranches in Hawaii for the years 1965 through 1980. The data in this table show a relatively steady increase in farm price between 1965 and 1978 with a significant increase in 1979. The number of cattle and calves sold has remained relatively stable as has the pounds sold. Thus, with an increasing price, the value of sales of cattle and calves has been increasing over the period. In fact, the value of sales between 1965 and 1980 has increased by about 200 percent. This increase was a result of an 11 percent increase in pounds sold (5.2 million pounds) and an increase of 170 percent in price between the two years.

Table 6 shows the number of cattle and calves and pounds sold for each of the islands for the years between 1972 and 1980 (data were not available for prior years). Although it is difficult to specifically identify trends during this period, it does appear that there has been a slight decline in marketings on the island of Hawaii; a significant decline on Oahu; and increase on Kauai; with Maui and Molokai remaining at about the same level of marketings.

Following World War II, consumer demand for high-quality beef increased in the United States at a very rapid rate. This situation led to the development of a large commercial feedlot industry on the Mainland. By 1955, 42 percent of the total commercial cattle slaughter in the United States was accounted for by fed cattle. This percentage has grown so that today over 65 percent of all cattle commercially slaughtered are fed in a feedlot.

TABLE 4. NUMBER OF BEEF CATTLE FARMS, JANUARY 1, BY SIZE GROUP, BY ISLANDS, STATE OF HAWAII, 1965-1980

Year	State		Hawaii		Kauai/Niihau		Maui		Molokai		Oahu	
	Total	20+ Cattle	Total	20+ Cattle	Total	20+ Cattle	Total	20+ Cattle	Total	20+ Cattle	Total	20+ Cattle
1965	1,500	550	600	250	220	70	370	130	30	15	280	90
1966	1,400	520	580	250	200	65	340	110	30	15	250	80
1967	1,400	520	580	250	200	65	340	110	30	15	250	80
1968	1,300	520	530	240	200	70	320	120	30	15	220	75
1969	1,200	500	490	230	190	70	300	120	20	10	200	70
1970	1,100	490	460	230	180	70	270	110	20	10	170	70
1971	1,000	480	420	220	170	75	250	110	20	10	140	65
1972	970	470	410	220	160	75	240	105	20	10	140	60
1973	960	460	400	210	160	75	240	105	20	10	140	60
1974	960	460	400	210	160	75	240	105	20	10	140	60
1975	930	450	385	205	155	75	235	105	20	10	135	55
1976	900	440	380	200	150	70	230	100	20	10	120	60
1977	900	440	385	205	150	70	235	100	20	10	110	55
1978	800	410	355	195	155	70	190	80	15	10	85	55
1979	800	400	355	190	155	70	190	80	15	10	85	50
1980	800	440	360	210	150	80	190	90	20	10	80	50

Source: Hawaii Agricultural Reporting Service

TABLE 5. CATTLE AND CALVES: NUMBER SOLD, POUNDS, PRICE, AND VALUE, STATE OF HAWAII, 1965-1980

Year	Number Sold ^{1/} (1,000 hd)	Pound Sold ^{2/} (liveweight) (1,000 lbs)	Farm Price ^{3/} (liveweight) (\$ per Cwt)	Value of Sales (1,000 \$)
		<u>STATE</u>		
1965	50	47,300	19.80	9,365
1966	57	53,238	20.40	10,861
1967	59	56,970	20.80	11,850
1968	64	61,240	21.00	12,860
1969	61	57,130	22.50	12,854
1970	64	59,450	23.40	13,901
1971	69	62,860	25.09	15,772
1972	67	59,760	27.70	16,557
1973	64	58,470	33.90	19,831
1974	54	50,935	35.90	18,286
1975	54	50,180	34.70	17,412
1976	62	59,140	31.30	18,511
1977	65	59,310	31.70	18,837
1978	69	62,300	39.10	24,370
1979	60	55,015	51.50	28,356
1980	55	52,475	53.50	28,074

^{1/}Includes custom slaughter for home use on farms where produced and out-of-State sales of cattle and calves; but excludes interfarm sales.

^{2/}Excludes custom slaughter for use on farms where produced.

^{3/}Prices are equivalent delivered slaughterhouse for sales on island of production and delivered shippers' dock for interisland and out-of-State sales.

Source: Hawaii Agricultural Reporting Service

TABLE 6. CATTLE AND CALVES: NUMBER AND LIVELWEIGHT POUNDS SOLD, BY ISLANDS, STATE OF HAWAII, 1972-1980.

Year	State		Hawaii		Kauai		Maui		Molokai		Oahu	
	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold
					(1000 hd and 1000 pounds)							
1972	67	59,760	43.6	37,862	4.6	4,434	12.4	11,361	2.0	1,632	4.4	4,471
1973	64	58,470	38.9	35,219	5.0	4,814	13.8	11,826	1.8	1,624	4.5	4,987
1974	54	50,935	33.6	31,898	4.2	3,706	10.9	10,264	1.5	1,186	3.8	3,881
1975	54	50,180	35.0	33,200	3.8	3,329	11.1	9,972	1.3	898	2.8	2,781
1976	62	59,140	39.9	37,792	4.4	4,149	12.0	11,119	2.6	2,861	3.1	3,219
1977	65	59,310	41.5	36,989	5.4	5,328	13.2	12,127	1.9	1,709	3.0	3,157
1978	69	62,300	45.9	41,035	6.1	5,775	11.8	10,246	2.2	2,039	3.0	3,205
1979	60	55,015	37.0	32,971	4.8	4,582	12.3	11,553	2.5	2,377	3.4	3,532
1980	55	52,475	34.5	33,153	6.0	5,765	10.6	9,510	1.3	1,124	2.6	2,923

Source: Hawaii Agricultural Reporting Service.

Hawaii has participated in this trend, although it has not reached the same level as achieved on the Mainland. In 1965, pen fed cattle in Hawaii accounted for 31.4 percent of the total number of cattle slaughtered in the State including custom slaughtered cattle for home use. (Table 7 and Figure 2). This percentage increased to a high of 61.1 percent in 1974 and then declined to the present level of 48.7 percent in 1980 i.e., 26,800 pen fed cattle out of a total of 55,000 head slaughtered.

Table 8 presents the number and dressed weight of cattle commercially slaughtered in the State between 1965 and 1980. It also shows the class of cattle marketed between 1968 and 1980 (these data were unavailable before 1968). It should be pointed out that cattle marketings include cattle commercially slaughtered and cattle custom slaughtered for home use. Thus, the total dressed weight of cattle marketings will be greater than the dressed weight of commercial slaughter.

Throughout this 15-year period, feedlot steers and heifers accounted for between 50 and 65 percent of the dressed weight of cattle marketings. In 1980, for example, feedlot steers and heifers accounted for 52.6 percent of the total cattle marketings while range steers and heifers accounted for 24.8 percent and cows and bulls for the remaining 22.6 percent. Thus, in terms of dressed weight, feedlot cattle have been accounting for over 50 percent of all cattle marketings in Hawaii.

Tables 9 and 10 show the number and liveweight of feedlot slaughter cattle (Table 9) and range and other slaughter cattle (Table 10) sold by island in the State. The feedlot slaughter cattle data does not mean that this amount of cattle were fed on the specified island -- rather, it means that of the cattle raised on the specified island this amount of cattle was slaughtered as fed cattle regardless of where the cattle were fed. Since a major amount of feeding is done on Oahu, much of the cattle raised on the outer islands actually were fed in feedlots on Oahu but would be accounted for as feedlot slaughter cattle on the originating island.

As can be seen from these two tables, there has been little change in the relationship of the various islands in regards to the percentage of the total feedlot or range cattle produced in the State accounted for by each island. The percentage of the total statewide sales of feedlot slaughter cattle sold from each island, except Kauai, has declined slightly--the percentage of total feedlot slaughter accounted for by Kauai as increased over the period.

In summary, the Hawaii cattle industry can be characterized over the past 15 years as one of very little growth in terms of total cattle produced; little change in the proportion of cattle production and marketings accounted for by each of the individual islands except for a slight decline

TABLE 7. NUMBER OF PEN FED AND RANGE SLAUGHTER CATTLE SOLD, STATE OF HAWAII, 1965-1980^{1/}

Year	Pen Fed Cattle ^{2/}	Range and Other Slaughter Cattle ^{3/}	Total	Pen Fed as Percent of Total
	(1,000 hd)			
1965	15.7	34.3	50	31.4
1966	22.9	34.1	57	40.2
1967	27.4	31.6	59	46.4
1968	31.4	32.6	64	49.1
1969	28.9	32.1	61	47.4
1970	30.4	33.6	64	47.5
1971	35.0	34.0	69	50.7
1972	37.4	29.6	67	55.8
1973	36.8	27.2	64	57.5
1974	33.0	21.0	54	61.1
1975	29.2	24.8	54	54.1
1976	35.3	26.7	62	56.9
1977	36.0	29.0	65	55.4
1978	38.3	30.7	69	55.5
1979	30.3	29.7	60	50.5
1980	26.8	28.2	55	48.7

^{1/} Includes custom slaughter for home use on farms where produced but excludes interfarm sales.

^{2/} Animals fattened on grain or other concentrates which produce a carcass expected to grade good or better.

^{3/} Animals fattened primarily on grass and other roughage; may include some supplementary feeding of grain, dairy cattle and calves included.

Source: Hawaii Agricultural Reporting Service

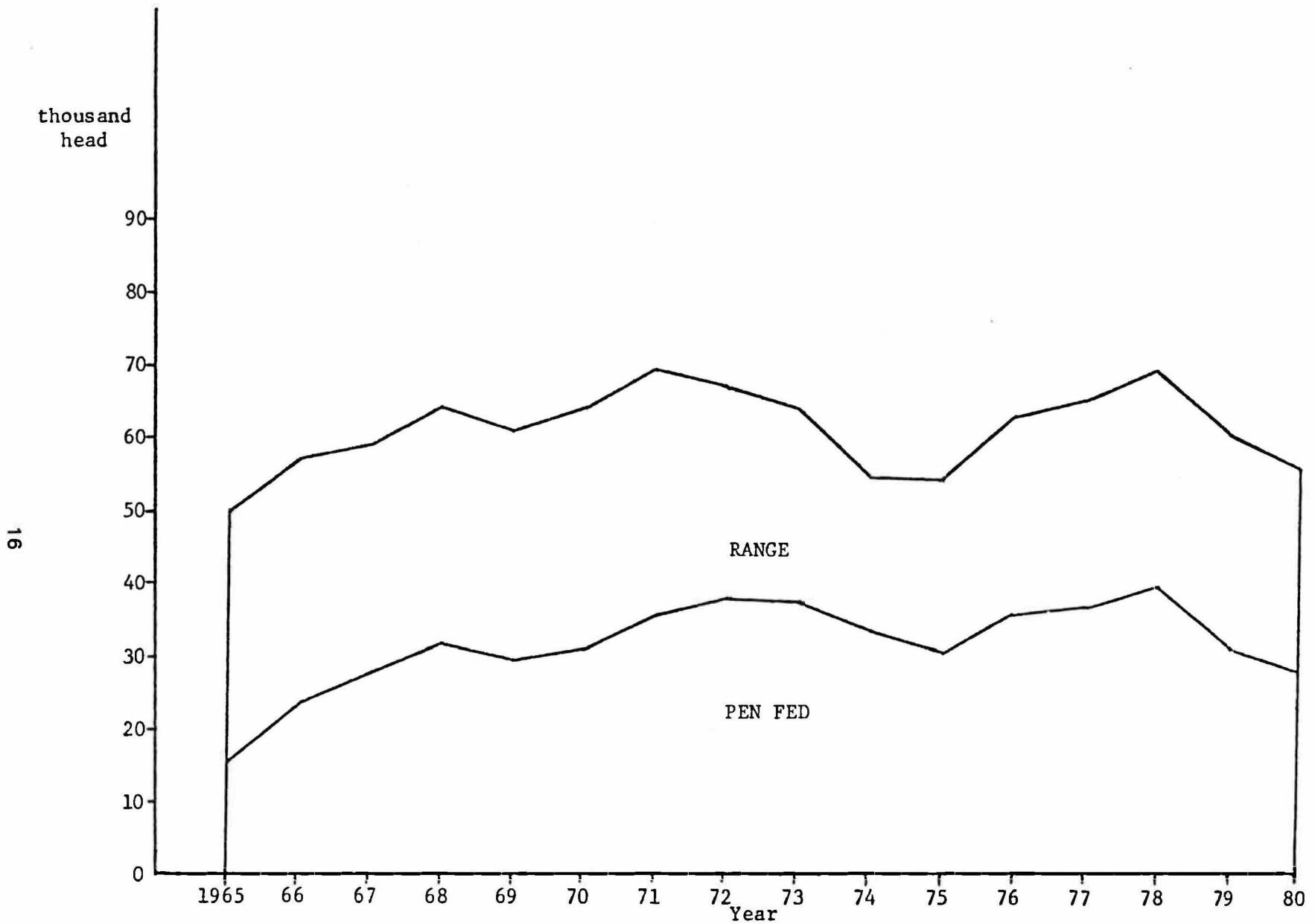


Figure 2. Total Cattle and Calves, Pen Fed Cattle, and Range Slaughter Cattle Sold, State of Hawaii, 1965-1980

TABLE 8. CATTLE: COMMERCIAL SLAUGHTER AND MARKETINGS, BY CLASS, STATE OF HAWAII, 1965-1980.

Year	Commercial Slaughter		Marketings--Dressed Weight			
	Number Head	Dressed Weight	Steers and Heifers		Cows	Bulls
			Feedlot	Range		
		(1000 pounds)			(1000 pounds)	
1965	50,500	26,211	-----	NA -----	-----	-----
1966	56,700	30,134	-----	NA -----	-----	-----
1967	59,900	32,362	-----	NA -----	-----	-----
1968	64,100	34,148	17,218	7,171	7,996	1,236
1969	61,400	32,037	15,776	7,593	7,081	914
1970	61,800	32,546	17,455	7,296	6,443	1,016
1971	65,600	34,292	19,829	6,430	6,856	850
1972	63,800	32,497	19,757	5,609	5,896	921
1973	60,800	31,261	20,074	4,528	6,049	966
1974	52,800	27,749	18,050	3,745	5,189	759
1975	53,000	27,872	16,559	4,024	5,744	956
1976	59,800	32,025	20,873	4,488	5,749	1,210
1977	61,200	31,186	19,576	6,310	5,478	961
1978	64,200	33,522	21,303	5,513	5,718	1,010
1979	54,000	28,459	16,573	5,803	5,958	991
1980	53,200	28,200	15,148	7,135	5,696	830

Source: Hawaii Agricultural Reporting Service.

TABLE 9. CATTLE: NUMBER AND LIVEWEIGHT OF FEEDLOT SLAUGHTER CATTLE SOLD, BY ISLANDS, STATE OF HAWAII, 1972-1980^{1/}

Year	State		Hawaii		Kauai		Maui		Molokai		Oahu	
	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold
1972	37.4	35,987	25.8	24,879	.8	823	8.2	7,824	1.2	1,086	1.4	1,375
1973	36.8	36,564	24.2	24,174	1.5	1,600	8.5	8,227	1.2	1,146	1.4	1,417
1974	33.0	32,872	22.3	22,284	1.2	1,162	7.4	7,407	1.1	980	1.0	1,039
1975	29.2	30,205	20.9	21,797	.9	938	6.7	6,775	.1	80	.6	615
1976	35.3	38,020	23.3	25,093	1.2	1,521	7.7	7,984	1.7	1,901	1.4	1,521
1977	36.0	35,658	23.1	22,873	2.1	2,198	8.5	8,423	1.5	1,383	.8	781
1978	38.3	38,969	26.7	27,235	2.3	2,435	6.9	6,911	1.6	1,535	.8	853
1979	30.3	30,188	18.8	18,651	1.6	1,621	7.4	7,452	1.5	1,477	1.0	987
1980	26.8	27,592	17.6	18,439	2.8	2,851	5.3	5,149	.4	413	.7	740

^{1/} Animals fattened on grain or other concentrates which produce a carcass expected to grade good or better.

Source: Hawaii Agricultural Reporting Service.

TABLE 10. CATTLE: NUMBER AND LIVENIGHT OF RANGE AND OTHER SLAUGHTER CATTLE SOLD, BY ISLANDS, STATE OF HAWAII, 1972-1980^{1/}

Year	State		Hawaii		Kauai		Maui		Molokai		Oahu	
	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold	Number Sold	Pounds Sold
					(1000 Hd and 1000 Pounds)							
1972	29.6	23,773	17.8	12,983	3.8	3,611	4.2	3,537	.8	546	3.0	3,096
1973	27.2	21,906	14.7	11,045	3.5	3,214	5.3	3,599	.6	478	3.1	3,570
1974	21.0	18,063	11.3	9,614	3.0	2,544	3.5	2,857	.4	206	2.8	2,842
1975	24.8	19,975	14.1	11,403	2.9	2,391	4.4	3,197	1.2	818	2.2	2,166
1976	26.7	21,120	16.6	12,699	3.2	2,628	4.3	3,135	.9	960	1.7	1,698
1977	29.0	23,652	18.4	14,116	3.3	3,130	4.7	3,704	.4	326	2.2	2,376
1978	30.7	23,331	19.2	13,800	3.8	3,340	4.9	3,335	.6	504	2.2	2,352
1979	29.7	24,827	18.2	14,320	3.2	2,961	4.9	4,101	1.0	900	2.4	2,545
1980	28.2	24,883	16.9	14,714	3.2	2,914	5.3	4,361	.9	711	1.9	2,183

Animals fattened primarily on grass and other roughage, may include some supplementary feeding of grain.

Source: Hawaii Agricultural Reporting Service.

from the island of Hawaii and a significant decline on Oahu; an increase in the portion of slaughter cattle marketed as fed cattle with little change in the relative share accounted for by each individual island; and, a decrease in the number of ranches with an accompanying increase in the average ranch size. In short, a situation of relatively little growth or change has existed over the past 15 years -- and this has occurred while beef consumption in the State has increased significantly. The Hawaii cattle industry has lost ground in terms of its role in supplying beef to the consumers in the State.

MARKET SUPPLY

In a review of the beef market situation in Hawaii, it is critical to recognize that, even though Hawaii is separated physically from the rest of the United States by some 2,500 miles, it is still an integral part of the U.S. market area. In terms of imports of beef from foreign countries and national industry conditions, Hawaii cannot separate itself from the rest of the United States. Thus, Mainland produced beef can be sold freely in Hawaii and if foreign beef is allowed to be imported into the U.S., it can also be imported into Hawaii.

It is also critical to recognize that Hawaii imports a relatively insignificant amount of the beef produced on the Mainland (45.2 million pounds out of 21,884 million pounds in 1979, or about 0.2 percent) and, that Hawaii imports a relatively insignificant amount of the U.S. imported beef from Australia and New Zealand (16.0 million pounds out of 1,233 million pounds in 1979, or about 1.3 percent). Thus, the size of the market for beef in Hawaii, in terms of Mainland production and Australian and New Zealand imports to the U.S., is relatively negligible.

This is not to say, however, that beef imports from the Mainland and Australia and New Zealand are not important in terms of Hawaii consumption. In 1980, Mainland imports accounted for 53 percent of the total market supply of beef in Hawaii and imports from Australia and New Zealand accounted for another 16 percent of total supply. Thus, beef imports accounted for 69 percent of the total market supply of beef in the State. Further, the portion of the total market supply of beef in Hawaii accounted for by imports has been growing over the past few years.

Table 11 and Figure 3 present the market supply of beef situation for the past 15 years. During the 1965-67 period, Hawaii production supplied an average of 28.8 million pounds of the beef consumed in the State, while in the period 1978-80 it supplied an average of 30.5 million pounds (47 percent). However, during these same periods, the total market supply of beef in the State increased from an average of 61.0 million pounds during 1965-67 to an average of 92.6 million

TABLE 11. MARKET SUPPLY OF BEEF AND VEAL, STATE OF HAWAII, 1965-1980

Year	Hawaii ^{1/}		Mainland		New Zealand-Australia ^{2/}		Total ^{3/}
	Carcass weight	Percent of total	Carcass weight	Percent of total	Carcass weight	Percent of total	
	1,000 pounds (carcass weight equivalent)						
1965	25,968	43	16,242	27	18,304	30	60,514
1966	29,228	48	15,967	26	15,436	26	60,631
1967	31,277	50	15,287	25	15,327	25	61,891
1968	33,621	51	15,512	23	17,162	26	66,295
1969	31,364	47	16,305	24	19,789	29	67,458
1970	32,210	48	17,708	26	17,604	26	67,522
1971	33,965	46	23,884	32	16,492	22	74,341
1972	32,183	41	30,819	39	15,532	20	78,534
1973	31,013	40	31,054	39	16,910	21	78,977
1974	27,467	33	40,237	48	15,636	19	83,340
1975	27,000	31	41,473	48	17,756	21	86,229
1976	32,320	35	39,839	43	20,414	22	92,573
1977	32,325	35	43,120	46	17,493	19	92,938
1978	33,544	36	42,087	45	17,146	19	92,777
1979	29,325	32	45,170	50	16,030	18	90,525
1980	28,809	31	50,348	53	15,202	16	94,359

^{1/}Excludes slaughter cattle and calves shipped out-of-State.

^{2/}Bone-in beef and veal and boneless frozen beef; boneless beef converted to carcass equivalent from import data @ 1.37. Includes small quantities from Canada and other foreign countries.

^{3/}After 1970 total supply was estimated and mainland inshipments derived.

Source: Hawaii Agricultural Reporting Service and U.S. Department of Commerce

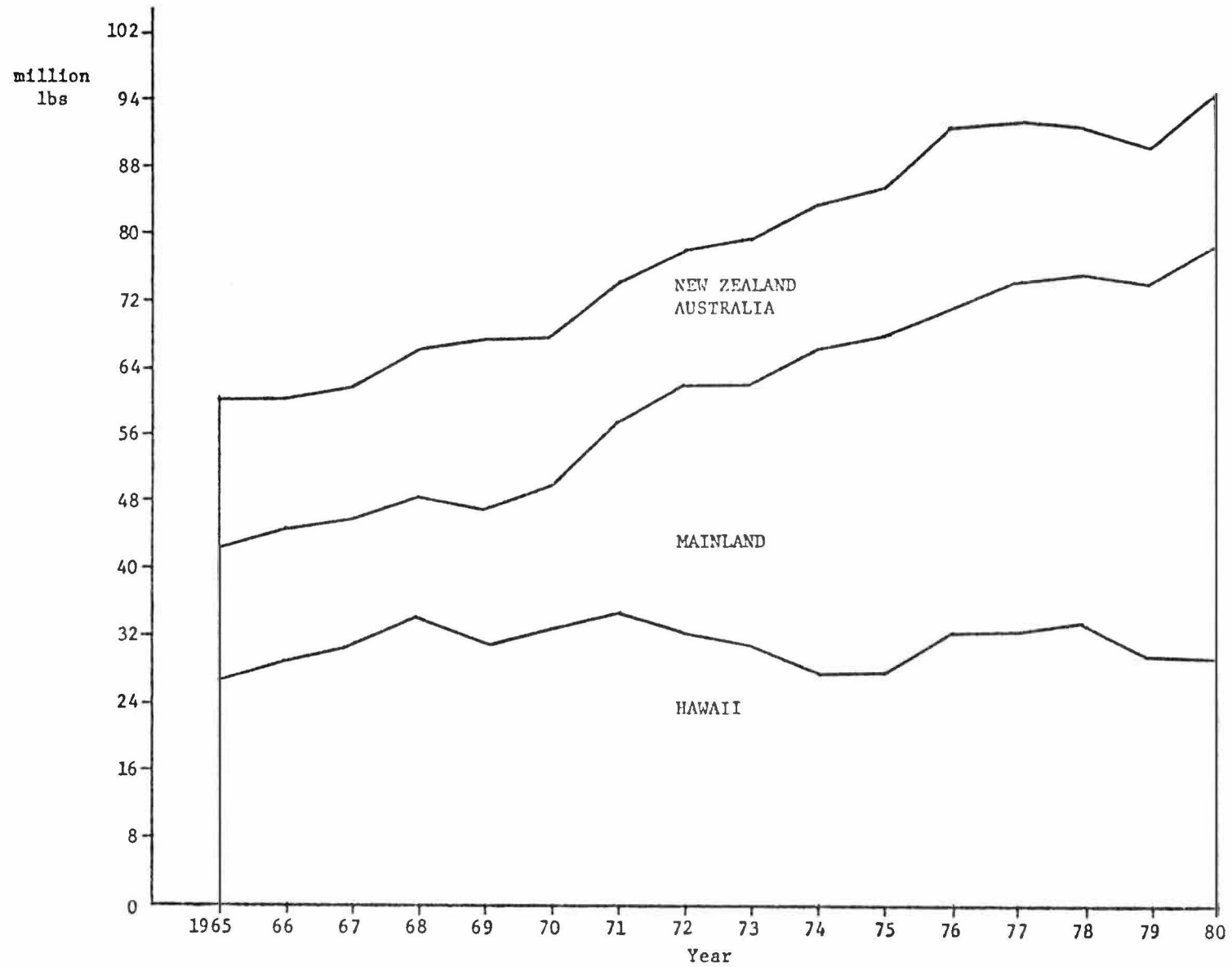


Figure 3. Market Supply of Beef and Veal, State of Hawaii, 1965-1980

pounds in the 1978-80 period (33 percent). Thus, when comparing these three-year periods, marketings of Hawaii produced beef remained relatively stable while the total market supply increased by over 50 percent.

The difference between the total market supply of beef in Hawaii and that portion supplied by production in the State is accounted for by imported beef. The quantity of beef imported from Australia and New Zealand has also remained relatively stable over the past 15 years--an average of 16.3 million pounds during the 1965-67 period and an average of 16.1 million pounds in the 1978-80 period. Imports from the Mainland between the two periods increased by 190 percent--from an average of 15.8 million pounds during the 1965-67 period to an average of 45.9 million pounds during the 1978-80 period.

In terms of the portion of the total market supply of beef in Hawaii accounted for by the three sources of beef: Hawaii produced beef declined from 47 percent of the total supply in 1965-67 to 33 percent in 1978-80; Australian and New Zealand imports declined from 27 percent in 1965-67 to 18 percent in 1978-80; and Mainland imports increased from 26 percent in 1965-67 to 49 percent in 1978-80. Thus, it can be concluded that the increased beef consumption in Hawaii which occurred between 1965 and 1980 has been supplied almost exclusively by imported beef from the Mainland.

This situation has significant implications for the Hawaii livestock industry. Since the size of the market in Hawaii for beef from Mainland production and Australian and New Zealand imports is relatively insignificant in terms of total Mainland production and total Australian and New Zealand imports to the U.S., prices for these types of beef respond to Mainland supply and demand conditions--not Hawaii's supply and demand conditions. Thus, prices at which imported beef from the Mainland and Australia and New Zealand is sold in Hawaii are predominantly set by Mainland conditions plus the added costs of shipping to Hawaii.

The conclusion that has to follow from the above is that prices received for Hawaii produced beef must follow very closely prices at which Mainland and foreign beef can be sold on the Mainland plus transportation costs.

Another fact that must be kept in mind is that Hawaii is a "Pocket Market". This means that Hawaii cattlemen are essentially restricted to selling in their own local State market. This is, to sell beef on the Mainland it must be priced on par with Mainland prices. And, this price must also cover the cost of transporting the beef to the Mainland. Thus, the cost of producing and processing beef in Hawaii would have to be less than that on the Mainland in order to have a price that would be competitive with the Mainland price. This, however, is not the case, i.e., costs of pro-

duction and processing are not lower than the Mainland. Grain, if fed to cattle, must be shipped to Hawaii as do most of the other inputs for cattle production. Further, the much larger sizes of feedlots and slaughter plants on the Mainland achieve economies of size not possible in Hawaii. In short, costs of production and processing beef in Hawaii are higher than on the Mainland.

Thus, the Hawaii cattle industry must either sell its beef at a higher price than Mainland beef, or it must continue to operate with a lower level of returns than its Mainland counterpart. In reality, only the second alternative is viable since any attempt to raise prices for Hawaii produced beef would likely stimulate consumers to turn to the alternative source of supply - Mainland beef.

In summary, the Hawaii cattle industry has very little control over the price and supply situation for beef in Hawaii. Hawaii beef prices for Hawaiian produced beef and imported beef from the Mainland and Australian and New Zealand are predominantly set by supply and demand conditions on the Mainland. Costs of producing and processing beef in Hawaii are currently and traditionally greater than on the Mainland. Therefore, if the Hawaii cattle industry is to continue to operate, it must be willing to accept lower returns than its Mainland counterpart and/or reduce production and processing costs by operating more efficiently.

INDUSTRY MARKET STRUCTURE

The basic job of the cattle and beef marketing system in Hawaii is to move cattle from some 800 ranches located throughout the islands to the some 965,000 residents of the State plus some 3.9 million tourists that visit the State each year. The job is further complicated by the fact that the State does not produce enough beef to satisfy the total demand. Hence, the job of marketing also includes supplementing local produced beef by imports from the Mainland and foreign sources, specifically Australia and New Zealand.

Historically the job of supplying beef to consumers has been accomplished by the combined efforts of several rather distinct segments within the beef industry. For the purpose of simplification, the various segments of the Hawaii beef industry may be considered as producing feeder cattle, feeding cattle, and slaughtering and processing cattle. These segments are differentiated by the products they produce: feeder cattle; fed or slaughter cattle; beef carcasses; and, cuts, processed meats, and other livestock products.

In addition to the above segments, there is an additional segment in Hawaii -- this is the segment involved with importing beef products which are currently required to

equalize the supply of and demand for beef by consumers in Hawaii. In some cases, the slaughtering and processing segment provides these imports, but the majority of the imported beef is conducted by the wholesaling and retailing segment in the State.

While there is considerable difference in the products which each of these segments produce or supply, the basic goals, purposes and objectives of the individual firms in these segments are essentially the same - improve or enhance their economic or profit position. In striving to achieve this goal, there are conflicts between firms in the different segments of the industry.

The relative degree of success an individual firm may have in dealing with a firm in another industry segment, i.e., a rancher and a slaughter plant, is partially dependent upon the basic livestock industry structure. Economic performance of the marketing system is determined largely by the number and size of the firms, degree of product differentiation, freedom of entry and exit both of the resources and individuals to and from the industry, and the knowledge level among buyers and sellers as to market supply and demand conditions and other factors affecting prices.

The purpose of this section is to describe the market structure of the Hawaii beef cattle industry. To accomplish this, the industry description will concentrate on the following segments; ranching (feeder cattle), feed lot (cattle feeding), slaughtering and processing, and wholesaling and retailing.

Ranching Segment

There are currently about 800 ranches in Hawaii with a total inventory on January 1, 1981 of 220,000 cattle and calves of which about 80,000 were cows. During 1980, these ranches sold 55,000 head of cattle and calves for a total value of \$28,074,000. Approximately 49 percent of the cattle and calves sold during the year were marketed through feed-lots -- the remainder were either cows or bulls, dairy cattle, or beef heifers and steers finished on range.

Although there is a relatively large number of ranches in Hawaii, the majority of the cattle in the State are carried on just a few larger ranches. In fact, almost one-half of all ranches in the State carry less than 20 head of cattle and calves in inventory. Therefore, the number of ranches actually marketing the majority of the cattle in the State is relatively small.

To obtain information on the marketing practices of ranches in Hawaii, a questionnaire was sent to a sample of 80 ranches. Questionnaires were returned from 25 ranches, the

total number of cows represented by these ranches amounted to 55 percent of all cows in the state while 57 percent of all cattle and calves marketings in the state was accounted for by these ranches. Included in these 25 ranches were 15 ranches that carried over 500 cows. These ranches carry over 50 percent of the cows in the State, market 55 percent of the cattle marketed in the State, and fed 74 percent of the cattle fed in feedlots in the State. Further, one ranch on the island of Hawaii carries 20 percent of the cows on inventory in the State, markets 24 percent of the cattle marketed in the State, and feeds 34 percent of all the cattle fed in the State. Thus, the marketing practices of this ranch will have a significant effect on the marketing of all cattle produced in the State.

The marketings of cattle produced in the State are made up of the following: 22 percent of all commercial slaughter is cows and bulls culled from herds throughout the State; 25 percent of all commercial slaughter is accounted for by steers and heifers that are kept on the range after weaning and fed on pasture until they are slaughtered; and 53 percent of the slaughter is accounted for by steers and heifers that are taken off pasture, generally at weights between 600 and 700 pounds, and placed in feedlots for finishing up to an average of 950 to 1050 pounds.

The cattle placed in feedlots remain in these lots for periods ranging from 85 to 160 days -- the overall average feeding period for all cattle is about 130 days. The average daily weight gain for cattle in the feedlots ranges from 2.5 to 4.5 depending upon the type of cattle feed, i.e., calves will gain closer to the 2.5 pounds per day and yearlings will gain closer to the 4.5 pounds per day. The overall average daily gain is approximately 3 pounds per day. The cost per pound of gain ranges from 55 cents to 70 cents with an average of approximately 60 cents. Much of the variance in cost per pound of gain appears to be due to location of the feedlot. The cost increases on the outer islands versus the feedlot in Honolulu. This is expected since there are economies of size associated with feedlots and the largest feedlot in the state is located in Honolulu. Also, feed costs are higher on the outer islands because of the cost of additional transportation and the need to secure feed in containers as opposed to barge bulk shipment to Honolulu. Barge bulk shipment is possible to Honolulu because there are storage facilities there. No storage facilities exist on the outer islands.

When cattle are finished, either in a feedlot or on range, they are sent to a slaughter plant. At this stage of the marketing channel approximately 60 percent of the cattle are still owned by the ranchers, i.e., about 60 percent of the cattle slaughtered are sold to the slaughter plant on consignment. Consignment selling will be described and discussed in detail in the section of this report entitled

"Slaughter/Processing Segment". Suffice here to say that ranchers sell the carcass generally on a weight, grade and yield basis to the slaughter plant. It is at this time that title to the cattle leaves the hands of the rancher and he receives payment. Ranchers were asked to estimate the time period between the sale of cattle and when they actually received payment. About 50 percent of the ranches claimed it took 14-30 days, 25 percent said 7-14 days and the remaining 25 percent said 1-7 days. It was interesting to note that ranchers selling to the same slaughter plant varied in their response from receiving payment in 1-7 days to receiving payment in 14-30 days. It was also interesting to note, as will be reported in the "Slaughter/Processing Segment", that slaughter plants claimed they generally pay ranchers at time of sale. The discrepancy is mostly a result of confusion as to when the sale took place and delivery time of mailed checks.

The ranchers in the survey were asked to identify problems they were having marketing their cattle. The following list include their responses:

- 1 Ranchers do not know how the prices they receive for their product are established. There is confusion as to how the price quote is derived and consequently, there is a fairly high degree of mistrust of slaughter plants by the ranches.
2. Neighbor island ranchers experience significant weight losses during shipment of cattle to the feedlot in Honolulu. Weight loss during shipment from the island of Hawaii have been as high as 10-12 percent. Regain of this weight loss may take as long as 20-30 days in the feedlot.
3. There is no real basis upon which live cattle price is determined. This is particularly relevant for ranchers that sell stocker calves to other ranchers. Also, they feel there needs to be additional markets for feeders.
4. There is significant dissatisfaction with cow prices. Ranchers feel there is a significant margin between ranch prices for cows in Hawaii and ranch prices on the Mainland. They feel the reason for this margin is that cow prices are based in Hawaii on Australian beef whereas all other cattle prices are based on Mainland prices.
5. Most ranchers prefer to send cattle to feedlots at about 650-700 pounds. This means that calves at weaning, weighing 350-450 pounds must be carried on pasture until they reach the desired weight of 650-700 pounds. The problem is that the grasses in Hawaii do not provide adequate nutritional value for a growing calf. These grasses are however, adequate for mature animals, i.e.,

cows. Thus, calves must be carried on pasture for a period of 8-10 months, and even longer in some cases, before they obtain the desired weight to send to the feedlot. There is evidence that animals that have been subjected to conditions, such as poor grass, which result in poor performance, also show poor performance in the feedlot. Thus, not only do calves grown on grass in Hawaii perform inefficiently between weaning and entering the feedlot, but they also have lower rates of gain in the feedlot. This, of course increases the overall cost of production to the rancher.

Feedlot Segment

Cattle feeding in Hawaii takes place in nine feedlots. There are three feedlots located on the island of Hawaii, four on Maui, and two on Oahu. There are also a few confined pasture type feeding areas that supplement pasture with concentrates -- however, these facilities are not classified as feedlots. Of the eight feedlots in the State, six have capacities of less than 1,000 head per day and two have capacities over 1,000 head per day. One of these feedlots, located on Oahu, has a capacity of 14,000 head per day and is the major feeding facility in the State. The total feedlot capacity at the present time in the State is about 20,000 head per day. Thus, the one feedlot on Oahu contains 70 percent of the total feeding capacity in the State. The remaining capacity is about equally divided between the islands of Hawaii and Maui.

Feedlot capacity, as used above, is the capacity of a lot at one point in time. Normally, the industry considers a turnover of between 2 and 2.5 times per year as an average operating situation. The rate of turnover will depend upon the utilization of lot capacity and the length of the feeding period. Thus, if Hawaii conforms to an average operating situation (there is no reason to believe otherwise) the annual amount of cattle that could be fed in the State if existing feedlots were utilized to capacity would be between 40,000 and 50,000 head. In 1980, 26,800 cattle were fed in these feedlots. This means that existing feedlots in Hawaii operated on the average at between 54 and 67 percent of capacity. Or, stated another way, existing feedlots in Hawaii could have fed an additional 13,200 to 23,200 cattle during the year.

A number of implications can be drawn from this situation. Underutilization of feedlot capacity can occur because of one or both of the following: 1) the lot is used throughout the year but at less than full capacity, i.e., some pens may be empty and/or pens may hold less cattle than their designed capacity; and/or 2) the lot may be completely empty during part of the year. Generally, the reasons for underutilization include such factors as unavailability of feeder cattle and/or feed grain, unfavorable price relationships

between feeder cattle and slaughter cattle; and poor scheduling of cattle into or out of the lot.

In Hawaii, ranchers maintain ownership of a large portion of the cattle throughout the feeding operation in the feedlot -- that is, a large portion of the cattle are custom fed for the rancher by the feedlot. Approximately 85 percent of the cattle fed in the large feedlot on Oahu are custom fed (it should be noted that over 80 percent of these custom fed cattle are from the ranch owned by the same entity that owns the feedlot). In the feedlots on the islands of Hawaii and Maui, however, only about 20 percent of the cattle fed are custom fed while the remaining 80 percent are cattle from the ranch that owns the feedlot or are cattle purchased by the feedlot from other ranchers.

If the feedlot owns the cattle being fed, it could schedule the cattle in and out of the feedlot in quantities and at times which would facilitate full utilization of the feedlot facilities. However, when custom feeding is the dominant form of feeding, feedlot operators are constrained by ranchers who make the decisions as to when cattle are to be placed on feed. This is the case in Hawaii, particularly at the large feedlot. Ranchers essentially decide when to place cattle in the feedlot and how many they will place. This situation, at times, is a major reason why feedlots in the State operate at less than capacity.

For example, frequently a rancher will send an entire lot of cattle to the feedlot for feeding. These cattle will not be sorted for size, and weights may vary by as much as 400-500 pounds at the time the cattle are placed in the lot. Since the cattle are at different weights, it takes different lengths of time to feed them to finish. In fact, there have been cases where it has taken over one month from the time the first of the group of cattle were sent to slaughter until the last of the cattle left the pen. This situation causes inefficient feeding and poor utilization of the feedlot, i.e., if the pen was full when cattle were placed on feed, during the last month the pen will be underutilized because of the removal of cattle as they are finished. For optimal efficiency, a pen of cattle should complete finishing at the same time. This can be accomplished by sorting cattle before placement in the pen.

A second example would be the situation that occurs frequently in which a ranch will send a quantity of cattle to the feedlot which is not large enough to fill a pen, i.e., a pen might be designed to hold 150 head while the rancher will send 120 head. However, since it is necessary to maintain identity of each rancher's group of cattle (because the rancher maintains ownership and is charged for the feed consumed by his cattle) the feedlot must place his cattle in an individual pen. Thus, the pen is underutilized for the time these cattle are on feed.

It would appear that many of the above problems could be eliminated, or at least reduced, if ranchers would join together and pool their cattle into like size and type and of the proper number to efficiently utilize pen sizes. There would have to be some sort of an incentive provided by the feedlot to encourage this type of solution, i.e., there is no reason why the rancher would be concerned about more efficient operation of the feedlot if the cost of custom feeding his cattle is not positively affected.

Table 12 presents the number and liveweight of feedlot slaughter cattle and range slaughter cattle sold by each island during 1980. This is the number of cattle that were raised on each island as calves and then either continued on range or fed in a feedlot somewhere in the State, i.e., if the cattle were fed, they weren't necessarily fed on the island on which they were raised. In fact, a relatively large number of cattle are shipped from the outer islands to the large feedlot on Oahu. During 1980, 70 percent of the cattle fed on Oahu came from the island of Hawaii (again, a majority of these cattle were from the ranch that is affiliated with the feedlot) while 20 percent came from Maui and 5 percent came from each of the islands of Kauai and Oahu. The situation is somewhat different in regards to source of supply to feedlots on the other islands. On the island of Hawaii, 100 percent of the cattle placed in feedlots comes from that island, and on Maui, 93 percent comes from Maui while the remaining 7 percent comes from the island of Hawaii.

The point of the above is that over 50 percent of all cattle fed in Hawaii are transported between islands before they enter the feedlot, and there are some problems associated with this movement of cattle. The major problem is weight loss during interisland shipment. Cattle quite frequently experience weight losses of 50-75 pounds per animal (7-9 percent shrink) during shipment from the island of Hawaii to the feedlot in Oahu. These ranchers estimate that it takes about 20 extra days in the feedlot to put this weight back on their cattle. The feed required to regain this weight plus the yardage fee for 20 days obviously is a cost to the rancher. It should be noted, however, that tissue loss during transport is minimal so the effect on carcass grade at slaughter is minimal - thus, the overall effect is primarily limited to the additional feed and yardage cost.

Most ranchers attempt to grow calves on pasture after weaning up to weights of 650-700 pounds. The reason for this is that they generally feel that this is more cost efficient than to feed the calf from weaning to finish in a feedlot. There is some question as to whether or not this is really the case -- if all land cost and labor cost is included in the cost of pasturing calves, the cost relationship to

TABLE 12. NUMBER AND LIVWEIGHT OF FEEDLOT SLAUGHTER CATTLE, RANGE AND OTHER SLAUGHTER CATTLE, AND TOTAL CATTLE AND CALVES SOLD BY ISLAND, STATE OF HAWAII, 1980

	Feedlot Slaughter Cattle		Range & Other Slaughter Cattle		Total Cattle & Calves	
	Head	Pounds Liveweight	Head	Pounds Liveweight	Head	Pounds Liveweight
Maui	5,300	5,149,000	5,300	4,361,000	10,600	9,510,000
Kauai	2,800	2,851,000	3,200	2,914,000	6,000	5,765,000
Oahu	700	740,000	1,900	2,183,000	2,600	2,923,000
Hawaii	17,600	18,439,000	16,900	14,714,000	34,500	33,153,000
Molokai	400	413,000	900	711,000	1,300	1,124,000
STATE	26,800	27,592,000	28,200	24,883,000	55,000	52,475,000

Source: Statistics of Hawaiian Agriculture, 1980. Hawaii Agricultural Reporting Service.

feeding in a feedlot might be closer than many ranchers think. This cost analysis should be conducted to clear up this disagreement. It should also be pointed out that it is probably more efficient to ship lighter cattle to the feedlots as heavier cattle take shipping much harder and it generally takes them longer to get used to confinement feeding. Thus, gains are not as good as achieved in lighter cattle and it takes longer to replace the shrink.

It has been suggested that the solution to the inter-island shipping problem is to locate the feedlot where the cattle are. If this is done, it will also require that the slaughter facility be located where the feeding takes place. Then carcasses could be shipped to Honolulu, the major consumption area.

This potential solution should be analyzed in-depth in regards to the economics involved as well as the environmental concerns and, in particular, water supply and waste disposal for the slaughter facilities (there is some question as to the availability of water in certain areas of the island of Hawaii where a large portion of the cattle are located). The economic analysis should include the cost of providing feed grain to the feedlot. At the present time all of the feed grain used in feedlots is imported from the Mainland, most of it to Honolulu. An estimate obtained in this study of the cost to barge grain from Honolulu to the island of Hawaii was \$40 per ton.

Currently, feed rations range from 50 to 90 percent concentrates (the remainder of the ration is roughage, primarily pine bran or silage). Further, the average feed consumption per pound of gain for the feedlots interviewed in this study ranged from 6-8 pounds. If, for example, a ration of 50 percent grain was fed and if feed consumption per pound of gain was 7 pounds, and if cattle were being fed from 600 pounds to a fed weight of 1000 pounds (400 pounds of gain) it would require about 1400 pounds of grain per animal. If the grain has to be transshipped from Honolulu to the island of Hawaii and if the cost of barge transport of grain was \$40 per ton, the cost of transporting this grain would amount to \$28 per head. Further, if it cost \$10 per head to bring live cattle from the island of Hawaii to Oahu and \$6 per 600 pound carcass then there would be a savings of \$4 per head by feeding and slaughtering cattle on the island of Hawaii. This would leave a \$24 per head cost from the shipping of grain to be covered by lower operating costs on the island of Hawaii relative to Oahu. A detailed economic analysis would be required to determine if, in fact, lower costs of this magnitude could be achieved.

In this analysis it is critical to fully investigate economies of size associated with feedlots. Considerable economies are achieved with larger feedlots. Table 13 presents the results of an analysis of three sizes of feedlots.

TABLE 13. TOTAL ANNUAL INVESTMENT, OPERATING AND REPLACEMENT COSTS, AND COST PER HEAD FED, THREE SIZES OF FLUME AND DIRT OPEN-LOT SYSTEMS AT 90 AND 60 PERCENT OF CAPACITY, 1979.

Feedlot Capacity and Type of Lot	Total Annual Cost				Cost Per Head Fed ⁴			
	Initial investment ¹	Equipment replacement cost ²	Operating expenses ³	Total	Initial investment	Equipment replacement cost	Operating expenses	Total
-----dollars-----								
<u>90 percent of capacity</u>								
500 Head								
Flume	29,438	14,064	60,591	104,093	24	11	49	84
Dirt open-lot	34,962	13,533	59,796	108,291	28	11	49	88
5,000 Head								
Flume	141,318	49,696	191,299	382,313	12	4	15	31
Dirt open-lot	148,817	53,147	222,006	423,970	12	4	18	34
10,000 Head								
Flume	253,807	97,072	355,964	706,843	10	4	15	29
Dirt open-lot	260,013	106,093	416,790	782,896	11	4	17	32
<u>60 percent of capacity</u>								
500 Head								
Flume	29,438	14,064	56,584	100,086	36	17	69	122
Dirt open-lot	34,962	13,533	55,106	103,601	43	17	67	127
5,000 Head								
Flume	141,318	49,696	172,869	363,893	17	6	21	44
Dirt open-lot	148,817	53,147	196,763	388,727	18	6	23	47
10,000 Head								
Flume	253,807	97,072	319,583	670,462	16	6	19	41
Dirt open-lot	260,013	106,093	365,286	731,392	16	7	22	45

1. Amortized over 15 years at 10 percent from data in Table 9.
2. From Tables 16 and 17 over 15-year period.
3. From Tables 12, 13, and 14.
4. Totals divided by number of head fed (Table 11). Cost does not include cattle or feed.

Source: Investment and Operating Costs for Two Types and Three Sizes of Florida Feedlots. Bulletin 817, University of Florida Agricultural Experiment Station, Gainesville, Florida.

It compares the investment and operating costs (excluding the cost of cattle and feed) for a traditional, dirt, open-lot system (which is the type suited for Hawaii) and a total confinement, all concrete, flume floor cattle feeding facility at three different sizes of one-time capacities of 500, 5,000, and 10,000 head.

A comparison of the total cost per head fed (the last column of the table) as one moves from the 500 head capacity lot to the 5000 head lot to the 10,000 head lot clearly points out the economies of size that are achieved. A comparison of the costs at the two levels of capacity utilization also points out the increased costs associated with underutilization of capacity. As can be seen from the table, a move from a 500 head lot to a 5,000 head lot will lower total costs per head (excluding the cost of cattle and feed) by \$54 in the dirt open-lot and \$53 in the flume lot. Further, a move from utilizing 60 percent capacity to 90 percent will lower costs in the 5,000 head lot by \$13 per head in both types of feedlots.

The point of the above is that any feedlot, whether it is an existing lot or a new lot, must be of a size that can provide economies of size and it must be fully utilized if it is to be competitive. Research shows that internal economies of size can be achieved as feedlots increase in size up to at least 25,000 head capacity. In many cases, external economies from volume feed purchases and in marketing can be achieved in even larger feedlots.

The purpose of feeding cattle in a feedlot is, of course, to produce beef that will grade higher than grass fed animals. The reason given to produce higher grade animals is that consumers prefer choice beef. There is growing concern by many in the industry that this may no longer be as important to consumers as it once was because of concern over consumption of fat and the higher price required to produce choice beef. At the present time, the average percent of the cattle marketed from Hawaii feedlots that grade choice or better ranges from 15 to 40 percent, with an overall average of 37 percent. (Individual ranches, however, will have lots of cattle but will vary from 15 to 80 percent choice grade.) This means that in 1980, about 10.2 million pounds liveweight or about 5.6 million pounds dressed weight of beef produced in Hawaii was marketed as choice or better. This amounts to about 19 percent of the total market supply of beef that was produced in Hawaii.

To summarize the cattle feeding segment of the livestock industry in Hawaii, it can be said that:

1. The industry has a relatively small number of firms with one firm dominating the others in size.

2. Most ranches custom feed their cattle in the lots so the size of the dominant feedlot has little effect upon the competitiveness of the remaining lots, i.e., it does not compete with the other lots for the purchase of cattle.
3. There is a significant underutilization of feedlot capacity in Hawaii which results in higher costs than if lots were operated at capacity. Also, better utilization of feedlot capacity could provide more Hawaiian fed beef to consumers.
4. Feedlots in Hawaii are small in comparison to many on the Mainland and consequently cannot achieve the same economies of size.
5. A considerable number of cattle are shipped between islands before entering feedlots. This causes stress and weight loss that is costly to the rancher to replace in the feedlot. Alternative feedlot locations must be analyzed in-depth from the standpoint of cost/benefits and environmental concerns.
6. At the present time, all grain fed to cattle in the feedlot is imported from the Mainland which places Hawaiian feedlots at a disadvantage relative to their Mainland counterparts.
7. The feedlot segment is providing choice beef of about 19 percent of all the beef supplied to consumers in Hawaii by Hawaii producers.

Slaughter/Processing Segment

The slaughter/processing segment of the Hawaii beef industry performs two basic functions; slaughter which provides beef in carcass form, and processing, which breaks carcasses into wholesale or retail cuts and/or further processes beef into products such as sausage, hot dogs, etc. Since most major slaughter plants do both functions, those plants which only process are included into this segment of the industry along with the slaughter plants. In this manner all processing of beef, except cutting done by a retailer, will be described.

At the present time, there are sixteen slaughter plants located in Hawaii -- six are located on the island of Hawaii, four on Maui, two on Oahu and four on Kauai. The total slaughter capacity of these 16 plants if all plants operated 8 hours per day for 250 days per year at rated daily capacity is estimated to be 131,000 head annually, or 525 head per day.

In passing, it should be pointed out that many plants on the Mainland have individual rated capacities higher than 525 head per day. And, there are considerable economies of size

to be gained in slaughter facilities. Thus, it can be concluded that all slaughter plants in Hawaii are not competitive with many plants on the Mainland. In fact, the rated capacity of the largest plant in Hawaii is close to what is now considered to be a minimum economic size unit on the Mainland if operated at maximum capacity.

During 1980, a total of 55,000 cattle were slaughtered in Hawaii. If 131,000 head is considered as full capacity operation of slaughter plants in the state, it can be seen that only about 42 percent of this capacity is utilized. It is really not realistic to assume that all plants will (or can) operate at rated capacity however. Only six of the 16 plants are designed and operated as full-time operations. The remaining ten plants are organized and operated as part-time custom slaughter plants. That is, they slaughter cattle for home consumption and a small amount of direct sales from a ranch to a retail outlet both of which are located on the outer islands. These plants will operate only 2 or 3 days per week and usually for only 4-6 hours and are manned by individuals as a second job.

The six major slaughter plants have a total rated capacity of about 112,000 head per year, or about 450 head per day. These plants are organized as a full-time operation. Thus, in terms of utilization of rated capacity, these plants, on the average, are operating at less than 50 percent. At this operational level, costs are extremely high on a per unit basis.

The source of supply of all cattle slaughtered on the outer islands is from the island on which the cattle are slaughtered. For the plants on Oahu, 19 percent of the cattle are supplied from Maui/Molokai, 64 percent from the island of Hawaii, 8 percent from Oahu and 9 percent from Kauai.

In terms of actual numbers of cattle slaughtered on each of the islands, it is estimated that during 1980, approximately 15,000 cattle were slaughtered on the island of Hawaii, 30,200 on Oahu, 7,200 on Maui and 2,600 on Kauai. In other words, about 56 percent of all cattle slaughtered in the state are slaughtered in the two plants located on Oahu. In fact, 44 percent of all cattle slaughtered are slaughtered in one plant on Oahu, and 73 percent of all cattle slaughtered are slaughtered in three plants -- two on Oahu and one on the island of Hawaii. It should be pointed out that the largest slaughter plant is the only federally inspected plant in the State. It should also be pointed out that even though this slaughter plant is affiliated with the largest feedlot and ranch in the State, prices for the sale of cattle slaughtered in the plant for the animals from the ranch and feedlot are established in the same manner as for cattle owned by other ranchers in the State.

Mention should also be made of the "Grazer's Distribution" utilized by the largest slaughter plant in the State. This is similar to a patronage refund used by Cooperatives -- part of the profits are distributed to the users of the slaughter plant on the basis of so much per dressed pound of beef killed in the plant per year. The profits distributed are comprised of the profits generated by the entire operations of the company including profits from the feedlot and feed mill operation. A problem is evident with this system in that those who feed their cattle in the feedlot (and thus contribute to the profits of the feedlot and feed mill) but do not have their cattle slaughtered in the slaughter plant, do not share in the distribution of profits. This does cause discontent within the industry.

A majority of the cattle slaughtered in Hawaii are slaughtered and sold on consignment. Overall, about 59 percent of the cattle slaughtered in the State are on consignment. This percentage is not the same on all islands, however. Essentially no cattle are slaughtered on consignment on the island of Hawaii and only 40 percent are on consignment on Maui. However, over 90 percent of all cattle slaughtered on Oahu are on a consignment basis.

On a consignment basis, cattle are slaughtered and the carcass price determined essentially on the basis of the going market for that weight and grade (quality grade and sometimes yield) and the proceeds, minus slaughter charges, are remitted to the consignee. Slaughter plants in Honolulu base their price on market prices in Los Angeles plus the 10-12 cent per pound transportation cost from the Mainland. One of the major slaughter plants in Honolulu uses Friday close market price and the other uses Monday close price. The slaughter plants on the outer islands base their price on Honolulu prices.

It should be noted that all ranchers are not fully informed of how prices are determined. For example, some slaughter plants pay ranchers on the basis of carcass hot weight (before shrinkage from cooling) while others pay on a chilled basis. Price is usually higher per pound when based on chilled weight because shrinkage has occurred in the chilling process. If a rancher does not know this, he would assume that one plant is paying a higher price than another where in reality, both are paying the same price. Lack of knowledge of this nature leads to mistrust among the various segments of the industry.

Under the consignment method of selling cattle, the rancher maintains title to the cattle until the time of grading -- when the cattle are sold and ownership changes hands from the rancher to the buyer. The common practice in Hawaii is for the buyer to pay the rancher for the cattle at this time, although this is not always the case. The buyer (slaughter plant) then sells the carcass, either whole or

broken depending upon the market, and when sold to some retail outlets the slaughter plants do not receive payment until 4 to 6 weeks later. Thus, the slaughter plant in these cases must carry the financing cost for that period of time.

The consignment method of selling is not a common practice on the Mainland. In fact, it is seldom used as a method of selling. The reason for this is that under consignment sale, the consignee (rancher) must bear the risks of death or injury losses before slaughter (during feeding) and during slaughter as well as the losses from bruising or condemnation and any delays that result while cattle await slaughter. Further, there is the problem of mistrust over the accuracy of weights and grading and maintaining identity of the animals after slaughter. These problems are evident in Hawaii, but do not appear to be overly serious. Proper and adequate communication between the buyer and seller can solve most of these problems.

The price at which cattle are sold by the rancher to the slaughter plant in Hawaii is established by private negotiation at the time of sale. This method of establishing price makes the evaluating of present market supply and demand conditions as well as determining the value of the animal the rancher's responsibility. In other words, the rancher must decide whether or not the quoted price accurately reflects the market situation. Unless the rancher has considerable time and resources to keep abreast of current market conditions, he is usually at a decided disadvantage in marketing in this manner (this is not to say he will be unfairly paid--it means that he will not know whether or not he is fairly paid).

As was mentioned earlier, the quoted price is based on market price in Los Angeles plus a margin for transportation cost. Hence, to a large extent, price is established on a formula basis even though it is negotiated under private treaty. Thus, the price received by Hawaii ranchers does reflect supply and demand conditions that exist on the Mainland. And, since a major portion of the beef supply in Hawaii is imported from the Mainland it appears to be realistic to base prices on Mainland conditions.

There are a couple of issues which should be considered when formula pricing is the dominant form of pricing. First, from the standpoint of negotiating prices in this manner, when trading is largely done on established specification (i.e., carcass weight, grade, and perhaps yield), it is undoubtedly an operationally efficient method. Transactions are largely concluded by telephone, thus eliminating much of the travel and other expenses incurred by buyers and sellers using alternative methods.

Second, and most important, is the concern over the possible effect on pricing efficiency in the marketing system

from the use of formula pricing. These concerns include: 1) the accuracy with which a selected price base reflects actual market supply-demand conditions for the product reported; 2) the applicability of prices reported to the products being traded; 3) the extent to which the price base can be manipulated by either party to the transaction; and 4) does the particular price base provide sufficient flexibility to reflect regional and local market differences (i.e., Hawaii vs. the Mainland, and outer islands vs. Honolulu) to stimulate adjustments to improve the overall efficiency of the cattle and beef industry in the State?

It is fairly evident that the price base now used does not allow optimum flexibility to reflect differences in the Hawaii ranching industry. However, it must be recognized that Hawaii is a pocket market, the result of which is that Hawaii slaughter plants must market their beef in Hawaii. This is because they cannot sell beef to the Mainland as no one will pay the cost of transporting the beef to the Mainland. Mainland plants can, however, market their product in another parts of the Mainland if an oversupply occurs in their area. Thus, pricing of beef in Hawaii must be based on Mainland price plus transportation to Hawaii and there is really nothing that slaughter plants can do to overcome this at the present time. Thus, temporary changes in the supply of Hawaii produced cattle to slaughter plants cannot be adequately reflected by price adjustments, since the difference between the supply of Hawaii produced cattle and market demand for beef will be made up by adjustments in the supply of Mainland beef.

This is an important concept that must be recognized by the beef industry. It is particularly important since Hawaii slaughter plants do not have complete control over their supply of Hawaii produced beef. For example, ranchers occasionally do not select a slaughter plant until they feel the cattle are ready to be slaughtered. At this time the rancher will inform the feedlot to market their cattle to a certain slaughter plant. This practice causes irregular volume in the slaughter plant which in turn affects the efficiency of plant operations. This is particularly serious when scheduled cattle do not arrive on time and thus the plant operates at lower volumes (the reason why scheduled cattle occasionally do not arrive on time would involve decisions by the rancher, who owns and controls his cattle, to not market at this time -- it could be because his ranch received rain and improves his grass to the point that he feels he could benefit from additional pasture feeding of his cattle). In any case, this irregular supply of cattle to the slaughter plant creates inefficiencies in the operation of the plant even though it doesn't really affect the end market situation because the difference will be made up of either an increase or decrease in the quantity of beef imported.

The solution to the above problem involves scheduling cattle throughout the system, i.e., consistent supply of cattle to feedlots and then to slaughter plants and/or from range to slaughter. Some of the slaughter plants are developing arrangements with ranchers to supply a committed number of cattle per week and it appears to be working well.

Some estimates can be made from the survey of slaughter plants and processors regarding the type of beef marketed and the type of markets to which the beef is sold. Overall, approximately 35 percent of all the beef marketed by slaughter plants and processors is choice or prime grade and 65 percent is good or lower grade. If just the Honolulu market is considered, then about 50 percent of all beef marketed by slaughter plants and processors located in Hawaii is choice or prime. This is not to imply that 50 percent of all the beef consumed in Honolulu is choice or prime because, as will be discussed in the retail/wholesale segment of this report, slaughter plants and processing plants do not supply all the beef to the Honolulu market.

The form of product marketed by the slaughter plants and processors in the State is estimated to be about 34 percent carcass sales, 31 percent as primal cuts, 12 percent as fabricated cuts and the remainder as boneless beef, hamburger and other processed products such as sausage, hot dogs, etc. The later category is where most of the cow and bull meat is marketed.

Most of the slaughter plants prefer to market their output as carcasses. By selling beef in the carcass form they eliminate the problem of finding markets for briskets, rounds, chucks, etc. These cuts are not demanded by the retail trade, especially hotels and restaurants, that demand only selected cuts such as steaks, roasts, etc.

The overall types of markets to which slaughter and processing plants market their product can be broken down as follows: approximately 48 percent of the beef is sold to retail grocery stores; 23 percent to institutions, including hospitals, schools, jails and military commissaries; 15 percent to hotels and restaurants including fast food outlets; 7 percent to wholesalers; and the remainder is custom slaughtered for home use. Basically, carcasses are marketed to other processors, wholesalers, institutions, and of course much of the custom slaughter is carcass form. Fabricate cuts are sold primarily to hotels and restaurants while primals and processed beef is sold primarily to retail grocery stores.

Sales to fast food outlets are very minimal since these outlets secure their beef in the form of frozen hamburger patties from the Mainland. The equipment required to produce frozen patties is expensive and the volume of fast food outlets in Hawaii will not justify the equipment.

Generally speaking, large volume retail grocery stores in Hawaii feel that Hawaii slaughter plants and processors cannot supply the volume and the consistent quality of beef that they require. Consequently, they secure most of their needs from the Mainland. The retail grocery stores on the outer islands, however, do provide a market for Hawaii produced beef. Further, most of these stores prefer good grade beef that is tender which can be produced in Hawaii. Thus, on the outer islands, the market for Hawaiian produced beef is sizable in relation to the total amount of beef consumed on these islands. But, the total amount of beef consumed on any specific outer island is not large enough to support a very large slaughter plant. In fact, existing slaughter plants must occasionally ship beef to Honolulu usually in a processed form. Beef, when shipped to Honolulu from the outer island has to be priced competitively with the beef imported to Honolulu from the Mainland.

As was mentioned earlier in this section, there are processing firms that just process beef, i.e., they do not slaughter cattle. These firms typically purchase carcass beef from Hawaii slaughter plants amounting to about 50 percent of the volume of these processing firms. The remaining volume is purchased in about equal amounts from the Mainland and Australia or New Zealand. The beef from the Mainland will be chilled and boxed, while the beef from Australia or New Zealand will be frozen and boxed. It should also be pointed out that slaughter plants that process will also import beef, especially from the Mainland, whenever they incur a short supply of Hawaiian produced beef.

All plants processing beef essentially do two things -- break carcasses into a salable product for retail outlets and further process beef into hamburger. In addition, many processors manufacture such items as hot dogs, sausage, etc. The market for these products is primarily retail grocery stores and institutions with a smaller quantity going to hotels and restaurants.

To summarize the slaughter/processing segment of the Hawaii beef industry it can be said that:

1. There is a relatively small number of slaughter plants in the state, only one of which is close to a size that can be, with today's technology, considered a minimum economic sized unit if it operates at full capacity.
2. There is a significant underutilization of slaughter capacity in existing plants throughout the State. In fact, the six full-time operated slaughter plants are, on the average, operating at less than 50 percent capacity. As a consequence, per unit costs are extremely high.

3. The slaughter plants located on islands other than Oahu are essentially locally oriented plants, i.e., cattle are purchased locally and beef is sold locally. The plants on Oahu primarily slaughter cattle and sell beef on a consignment basis for ranchers throughout the state.
4. There is a general lack of knowledge by ranchers as to how prices are determined and what they mean in terms of guiding their decision-making process. A major reason for this situation is that prices are determined by the supply and demand situation on the Mainland, i.e., prices in Hawaii are essentially Mainland prices plus transportation to Hawaii.
5. A majority of the cattle slaughtered in the State are slaughtered and sold on consignment. As a result, slaughter plants have very little control over their supply (both quantity and time of receipt) and thus are unable to operate their plants at uniform rates of production. This creates inefficient operation of the plants.
6. Slaughter and processing plants market about 2/3 of their beef at a good or lower grade. These plants market about 1/3 of their beef as carcass, 1/3 as primal cuts and the remainder as fabricated cuts and processed beef. And, these plant market about 1/2 of their institutions and the remainder to hotels and restaurants, wholesalers and custom slaughter for home use.

Retailing/Wholesaling Segment

Information relating to the structure of the retailing-wholesaling segment of the beef industry in Hawaii was extremely difficult to obtain. It was essentially impossible to interview any significant portion of the firms and businesses involved with retailing and wholesaling beef in Hawaii -- firms retailing and wholesaling beef include grocery stores, wholesalers, importers, fast food outlets, restaurants, hotels, military commissaries, and institutions such as hospitals, universities, and schools. Further, in many cases information could not be obtained at all because it was considered confidential. Therefore, information upon which much of this section is based is somewhat incomplete in not coming directly from participants in this segment of the beef marketing system.

However, since relatively complete information was obtained from slaughter plants in Hawaii in regard to where they market beef, types of beef marketed, etc., this information is used to supplement the information secured from the retailing/wholesaling segment of the industry. Further, information relating to population, tourist trade, per capita consumption rates, etc. are also used to supplement the

retailing/wholesaling data. Accordingly, the authors believe formation presented in this section of the report is reliable and adequate to describe the market structure of the retailing/wholesaling segment of the beef marketing system in the State.

Before describing the retailing/wholesaling market structure it is important to briefly review the situation on the consumption of beef. Per capita consumption of beef reached a peak of 129.3 pounds per person in the United States in 1976. Since then, per capita consumption of beef has declined annually so that in 1980, per capita beef consumption fell to 105.8 pounds. This was a 23.5 pound or 18 percent drop in consumption in four years.

Beef consumption in Hawaii has always been less on a per capita basis than the U.S. average. However, it has been following the general trend evident for the entire U.S. Per capita consumption also peaked in Hawaii in 1976, at 97.3 pounds. By 1980, consumption had dropped to 89.6 pounds per person. This 7.7 pound drop in consumption amounts to an 8 percent drop over the four year period in the State.

The volume of beef consumed in Hawaii, and other places as well, depends on a number of factors among which are: the price of beef; the price of substitutes of beef, namely pork, chicken, and fish; personal income of consumers available to purchase meat and meat products; and the personal tastes and preferences of consumers.

A number of things have occurred over the past four years that have had an influence on these factors, among which are: the price of beef has increased considerably -- the average retail price of beef in the U.S. has increased from \$1.48 per pound in 1976 to \$2.38 in 1980, an increase of 90 cents per pound, or 60 percent -- this has largely been the result of a sharp reduction in beef production over the period because of a lack of producer profits; the price of poultry, pork and fish, have also increased in price, but the increase has not been as pronounced as that of beef, thus creating a situation where these items are considered "a better buy" by consumers; consumers are spending less of their disposable income for all meat and poultry products even though total dollar expenditures for meat and poultry were at an all time high in 1980; consumers have become more concerned about their eating habits, especially the dietary theory that says that eating too much animal fat is not good -- this concern has been particularly evident among upper income consumers who have been traditionally major beef users.

In terms of specific impacts on Hawaii from the above factors it must be remembered that beef prices in Hawaii are essentially determined by the supply and demand (and resulting price) situation on the Mainland. Therefore it can be

concluded that these same forces have affected Hawaiian consumption of beef in a manner similar to the U.S. as a whole.

The total volume of beef consumed in Hawaii increased by 1.8 million pounds over the past four years. Hence, increasing population in the state has, in terms of total consumption of beef, overcome the decreasing per capita consumption trend.

The most important factor affecting consumption of beef in Hawaii as expressed by the retailing/wholesaling segment (and other segments as well) of the beef industry is the trend toward consumer preference of leaner beef. Leaner beef is less costly to produce and thus costs less to the consumer, and, since it has less fat, it more closely satisfies the dietary concerns of consumers. If this trend continues and especially if it increases, it would bring about a number of changes in the production and marketing of beef in Hawaii (and elsewhere as well). At the present time most participants in the retailing/wholesaling segment are generally taking a "wait and see" attitude.

The retailing/wholesaling segment of the Hawaiian beef industry has a large number of participants. There are over 54,000 hotel units in the state; over 1,400 restaurants; 160 grocery stores and markets; 40 grocery retail supermarkets; 50 firms involved in one way or another in wholesaling meat and/or meat products; and 25 meat retailers not classified as grocery stores. In addition to the above, the military purchases beef and beef products for troop issue and for its commissary stores. Finally, hospitals, private and public schools and universities, and the prison systems in the State are involved in buying and/or selling or providing beef products to consumers.

On July 1, 1980, the de facto population of Hawaii was estimated to be 1,052,700 (de facto population is defined as the number of person physically present in an area, regardless of the usual place of residence; it includes visitors present, but excludes residents temporarily absent - hence, the use of de facto population gives the most accurate number of consumers upon which per capita consumption rates can be determined). Included in this population estimate is 125,042 military personnel and their dependents (about 12 percent of the total population).

Assuming that the per capita consumption of military personnel and their dependents is the same as the civilian population (there is no reason to believe differently) then the military market for beef amounted to 12 percent of the total market supply of beef for the year, or about 11.2 million pounds. It is estimated that 90 percent of this consumption need is supplied through the military procurement system and finds its way to military consumers through troop issue and commissary stores (the remaining 10 percent reaches

the military consumer through non-military grocery stores and restaurants). Hence, about 10 million pounds of beef is procured by the military and it is estimated that approximately 60-70 percent of this is sold through commissary stores, military clubs, etc.

Beef purchases for commissary stores have been primarily chilled boned beef from the Mainland. There is no consistency in grade of beef purchased by commissary stores, i.e., some purchase only choice and some mostly good grade. Overall, it is estimated that about 60-70 percent is choice grade. Recently, two of the large commissary stores have begun to purchase Hawaiian beef from a slaughter plant in Honolulu which submitted the low bid for the contract. Thus, at the present time, Hawaii produced beef is supplying a major portion of the beef sold through military commissary stores. Continued use of Hawaii produced beef will depend upon whether the bid submitted is the lowest bid.

There are no data available on pricing and price policies of commissary stores. However, it is quite likely that bulk buying plus the lack of profit motives would result in lower prices for this meat than if purchased from other retail outlets. Military dependents and servicemen living off base as well as military clubs and restaurants and others with commissary privileges are an important segment of the consuming public in Hawaii, and as such, the beef they purchase is an important part of the overall market for beef in the State. The recent initiation of the sale of Hawaii produced beef to the military should be considered as a very important factor in the future demand for cattle produced on Hawaiian ranches.

The hotel and restaurant market is another major market for beef in the State. Not only do some 3.5 to 4.0 million tourists visit the Islands each year and consume beef in these outlets, but eating meals away from home is a very common practice of residents of the State. It is estimated that between one-third and one-half of all meals are consumed away from home in Hawaii. Further, it is estimated that about one-third of all beef consumed in Hawaii is consumed through the hotel and restaurant trade. Thus, during 1980 approximately 31.5 million pounds of beef was marketed to consumers through hotels and restaurants (including fast food outlets) in the state.

The major tourist type restaurants procure mainly choice or better grade beef -- approximately 85 percent of the chefs of these restaurants order choice grade or better with 40 percent ordering only prime beef. The smaller neighborhood type restaurants usually procure good grades 1 and 2. The fast food outlets procure all of their beef, except for a few local non-chain type fast food outlets, in frozen patty form from the Mainland. This beef is usually procured directly from either a packing plant or from the outlet's national

organization if it is a national chain.

Restaurants and hotels have traditionally procured their supply of beef from the Mainland. They have a large demand for uniform weighted cuts of beef, often trimmed to specific customer size. And, they procure only certain cuts such as sirloins and rib-eye steaks, rib roasts, etc. Chefs say they cannot get consistent quantity and quality of these beef items from suppliers in Hawaii (slaughter plants, processing plants). Thus, they purchase either directly from a Mainland packer with a sales office in Hawaii or from one of the wholesale importers. It is estimated that only about 15-20 percent of all beef purchases by restaurants and hotels is Hawaii produced beef -- most of which is purchased by the smaller neighborhood type restaurants. Some Australian and New Zealand beef is utilized by restaurants in beef dishes or in processed products such as hot dogs, sausages, etc., where the appearance of beef is not critical -- this beef is frozen and frozen beef is not generally sold to consumers as consumer cuts because its appearance is not as pleasing as fresh beef. This also applies to sales to consumers from retail grocery stores. It is not known how much Australian and New Zealand beef is consumed in restaurants, but discussions with a few restaurants would indicate that perhaps as high as 15 percent of the beef used in restaurants could have its origin in Australia and/or New Zealand.

Almost one-half of the beef consumed in Hawaii is marketed through retail grocery stores. There are four major retail supermarket chains that market the major portion of beef to consumers in the State. In addition, there are numerous smaller neighborhood type grocery stores and a small number of retail meat markets supplying the remainder of the population.

The retail supermarket chains tend to purchase most of their beef from the Mainland. About 75 percent of the beef marketed by these stores is imported from the Mainland, 20 percent is supplied by Hawaii produced beef and 5 percent is imported from Australia and New Zealand. Actually, when the processed meat products are considered (hot dogs, sausage, lunch meats, etc.) these stores utilize much more imported beef from Australia and New Zealand -- but the stores do not directly import this beef. This beef is imported by beef processors, through importer/wholesalers, and is used to manufacture processed products that in turn are sold to retail grocery stores. The retail chains import Australian or New Zealand beef primarily to use for grinding into hamburger. If processed meats are included it is estimated that 10-15 percent of the beef marketed through retail supermarket chains is Australia/New Zealand imported beef.

Retail supermarket chains, as well as the other types of retail grocery stores marketing beef, are interested in efficient operations, both buying and selling. They require

regular supplies and consistent quality beef for their marketing program. They must maintain a standard for their beef that can be recognized and trusted by consumers.

Historically, beef retailers have been largely unable to obtain their requirements from the sellers of Hawaiian produced beef, i.e., slaughter plants. Hawaii slaughter plants have been largely unable to supply consistent quantities of the quality beef required by these stores.

At the present time, all retail supermarket chains, except one which is on a no-roll program, procure mostly choice beef (smaller neighborhood groceries tend to procure good grade, however). The normal percentage would be 90 percent choice and 10 percent good or lower (this is the beef used primarily for hamburger). The overall volume of choice beef marketed by these stores cannot be estimated since total volume of beef marketed was considered confidential information by some chains. However, it is known that all of the pen fed cattle produced in Hawaii that graded choice in 1980 (26,800 head x 37 percent choice = 9900 head) would fulfill only about 50 percent of the requirements of just one of the retail supermarket chains interviewed in this study. This illustrates the problem in attempting to operate a retail grocery store on the basis of purchases of Hawaiian beef in terms of volume required.

A second problem exists which is the inability to be able to secure a consistent quantity of beef each week from Hawaii slaughter plants. The problem faced by slaughter plants in providing consistent quantities of beef was discussed earlier in this report. Compounding the problem is the fact that Hawaiian slaughter plants do not vacuum pack beef since they market soon after slaughter. However, retail supermarket chains prefer primals and sub-primals vacuum packed because it lengthens the storage life by providing an oxygen barrier. Thus, primals and sub-primals, when cut for retail, are showing much better bloom and longer case life than is possible without vacuum packaging.

Retail grocery stores procure most of their beef, as sub-primals which they then cut into retail cuts in the store -- breaking primals at the retail level is very costly due to relatively high labor costs. Mainland procurement for the retail supermarket chains is accomplished through either membership in a voluntary chain, Mainland chain distribution centers in the case of national chains, or individual brokers located on the Mainland. Beef is generally shipped to Hawaii in containers which are packed so that individual store orders are loaded as a unit. Thus, distribution to individual stores is done from the container. Mainland procurement, as well as some of the procurement of Hawaiian produced beef for the smaller neighborhood grocery stores is accomplished through importer/wholesalers located in Hawaii.

Importer/wholesalers are a relatively important link in the marketing channels, particularly in the provision of beef from Australia and New Zealand, and in the importing of significant quantities of Mainland beef to supply the restaurant and hotel trade in Hawaii. Time did not allow an in-depth review of this segment of the industry (there are over 50 firms involved in some way with importing beef). However, it is felt that the function of wholesaling Mainland beef to slaughter plants and processors, retail supermarket chains, and restaurants was adequately reviewed through those sectors. Since the importation of beef from Australia and New Zealand is significant as a percentage of the total market supply of beef in the State (16 percent), the following is designed to review the situation in regard to imported beef from these foreign sources.

Over 90 percent of all beef imported from Australia/New Zealand is boxed, frozen, boneless beef and is used for grinding into hamburger and processed beef products or cut into stew meats. The remainder is served as cooked meat in restaurants or sold in retail grocery stores as retail frozen beef. It is estimated that approximately one-half of the imported foreign beef goes directly to meat processors who manufacture products that are eventually marketed to consumers through retail grocery stores, restaurants, and institutions in the State. About 30 percent of this imported foreign beef goes directly to retail grocery stores and 20 percent directly to restaurants. Overall, it is estimated that the final destination of imported beef from Australia or New Zealand is about 25 percent to restaurants and hotels, 72 percent to retail groceries, and 3 percent to institutions.

There are a number of reasons why imported foreign beef finds a rather substantial market in Hawaii. Probably most important is the fact that imported frozen beef from Australia and New Zealand is priced at rates with which Mainland imports and the Hawaiian cattle industry find extremely difficult to compete. Further, the quality of this foreign imported beef compares well with Mainland and Hawaii beef for the purposes for which it is used. And, finally, it is available in practically unlimited quantities, on short notice and the supply is reliable. In short, lower price and a consistent and reliable supply favor the foreign imported frozen beef for uses where frozen appearance is not a disadvantage.

Finally, there is one additional comment that should be made in regard to foreign imported beef. While the Hawaiian beef industry may suffer hardships in terms of reduced markets, the beef consumer in Hawaii is able to buy certain types of beef at a price below that which would result if Australian and New Zealand beef was not imported into the State.

SUMMARY

Over the past 15 years the Hawaii livestock industry can best be described as a relatively stagnant industry. Cow numbers have remained about the same; the calf crop has remained about the same; the number of cattle and calves on inventory on ranches has remained about the same; and the number of cattle and calves marketed each year has remained about the same. The only real change has been a decrease in the number of ranches and an accompanying increase in size of ranches remaining, and an increase in the proportion of slaughter cattle that are marketed through feedlots.

During this same 15-year period the consumption of beef in Hawaii has increased significantly. The entire increase in consumption has been supplied by imported beef from the Mainland. Thus, it appears that a significant market exists for Hawaiian produced beef that has not been supplied in the past by the Hawaiian beef industry. The current question is -- should the Hawaiian beef industry pursue this market at the present time? or, more broadly stated, what are the options available to the Hawaiian beef industry for making adjustments that will lead to a viable industry over the long run?

Before appropriate options can be determined it is necessary to identify the characteristics of the current livestock system -- particularly the existing marketing system in Hawaii through which the product of the industry, beef, moves from the rancher to the ultimate consumer. Available options for the industry then can be analyzed as to their impact on the existing structure and their effectiveness in improving the existing system so that it will be more effective in creating a more viable beef industry in Hawaii over the long run. The purpose of this study is to describe the existing beef industry, particularly the marketing segment of this industry.

Since this report presents in detail a description of the various segments of the livestock marketing industry, this section of the report will attempt to present: 1) a description of the current flow of beef through the marketing system, i.e., what institutions are involved and what volumes flow through each; and 2) a summary of the factors most prominent in affecting and being affected by the current (and/or future alternative) marketing system.

As was pointed out earlier in this report, 53 percent of the market supply of beef in Hawaii is imported from the Mainland; 16 percent is imported from Australia and/or New Zealand; and 31 percent is supplied by beef produced in Hawaii. Figure 4 presents a diagram of the flow of beef from these three sources (Mainland, Australia/New Zealand, and Hawaii) to the final retail outlet that supplies beef to the ultimate consumer. The importance of this Figure is that it

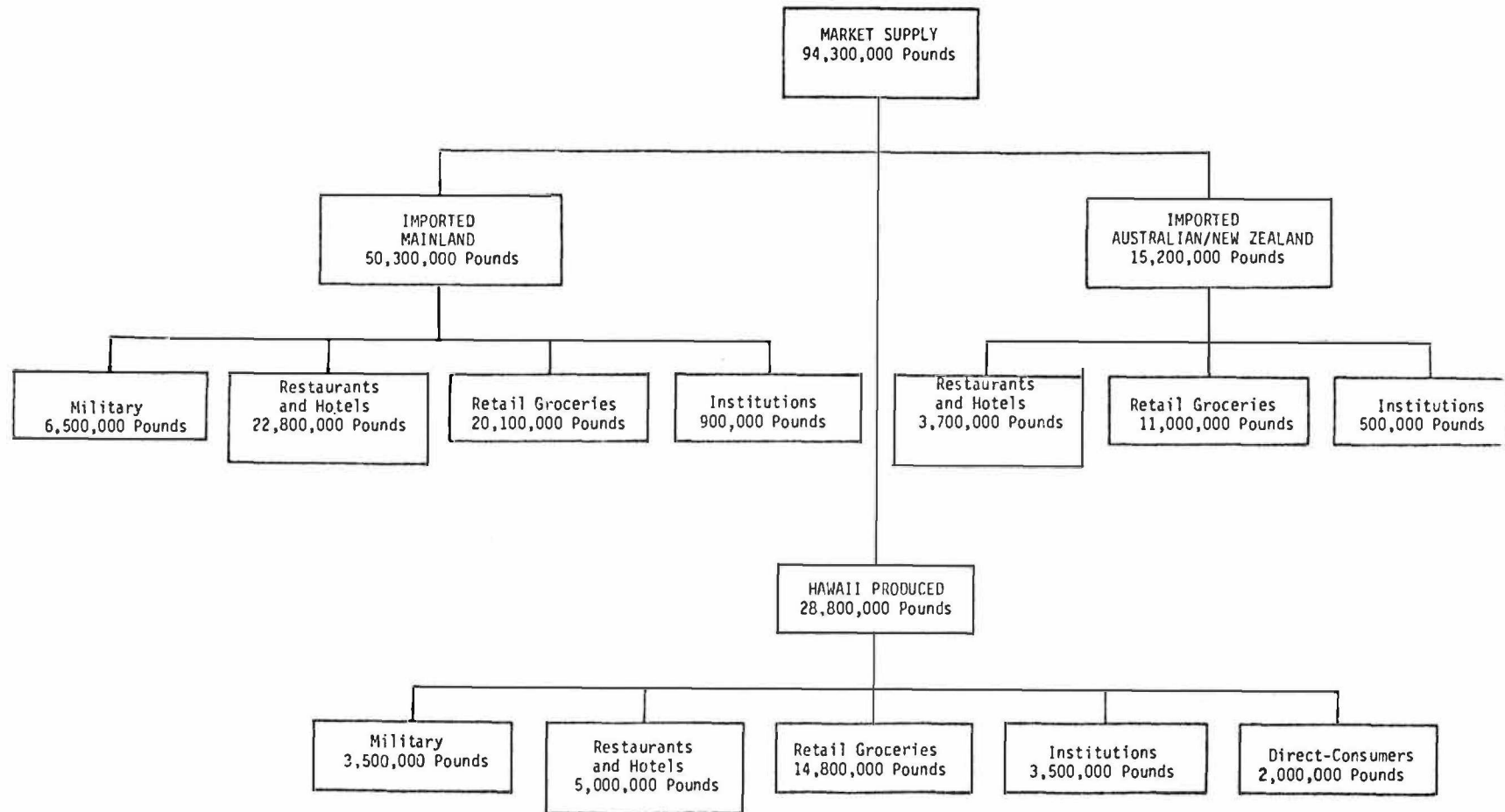


Figure 4. Market Flow of Hawaiian Produced and Imported Beef To Final Retail Outlets, Hawaii, 1980 (Pounds are carcass weight equivalents)

identifies the origin of the beef purchased by the various retail buyers of beef. The retail outlets that are currently purchasing beef from imported sources are the buyers that will have to be convinced to purchase Hawaiian produced beef if the market for Hawaiian produced beef is to be expanded.

Figure 5 presents a more in-depth picture of the market flow of the beef provided to Hawaiian consumers by the livestock industry of the State -- from the cow-calf ranch operation through the system to the final consumer. The importance of this Figure is that it identifies the various institutions involved with performing the various functions required to provide the consumer with beef from a live animal, the calf, located on a ranch. It will be these institutions and functions that will affect or be affected by alternative options that the livestock industry may want to analyze in terms of potential future adjustments, and their effect on the viability of the industry.

The following is a listing of the factors that this study concludes are important to understand and to take into consideration when various options are being developed and/or analyzed as possible alternative marketing systems for the Hawaiian livestock industry.

1. Per capita consumption of beef in the United States and in Hawaii has been declining over the past four years. The primary factors explaining this decline are: considerable price increases for beef forcing beef out of the diets of many families through the substitution of lower priced pork, fish, and poultry; and increased preference of consumers for leaner meat (less fat) because of dietary concerns--this concern is particularly evident among upper income consumers who have been traditionally the best beef customers.
2. Hawaii is a small regional market that cannot act independently of the national market of which it is part. Thus, in terms of imports from foreign countries and national livestock industry conditions, Hawaii cannot separate itself from the rest of the United States.
3. The price structure for beef in Hawaii is determined by supply and demand conditions on the Mainland. This supply and demand condition includes consideration of both Mainland produced beef and the importation of foreign frozen boneless beef. Prices for higher quality Hawaiian produced beef competing with beef imported from the Mainland are established at Mainland prices plus the cost of transportation to Hawaii. Lower quality beef produced in Hawaii is priced at the same level that imported Australian/New Zealand beef is priced on the Mainland.

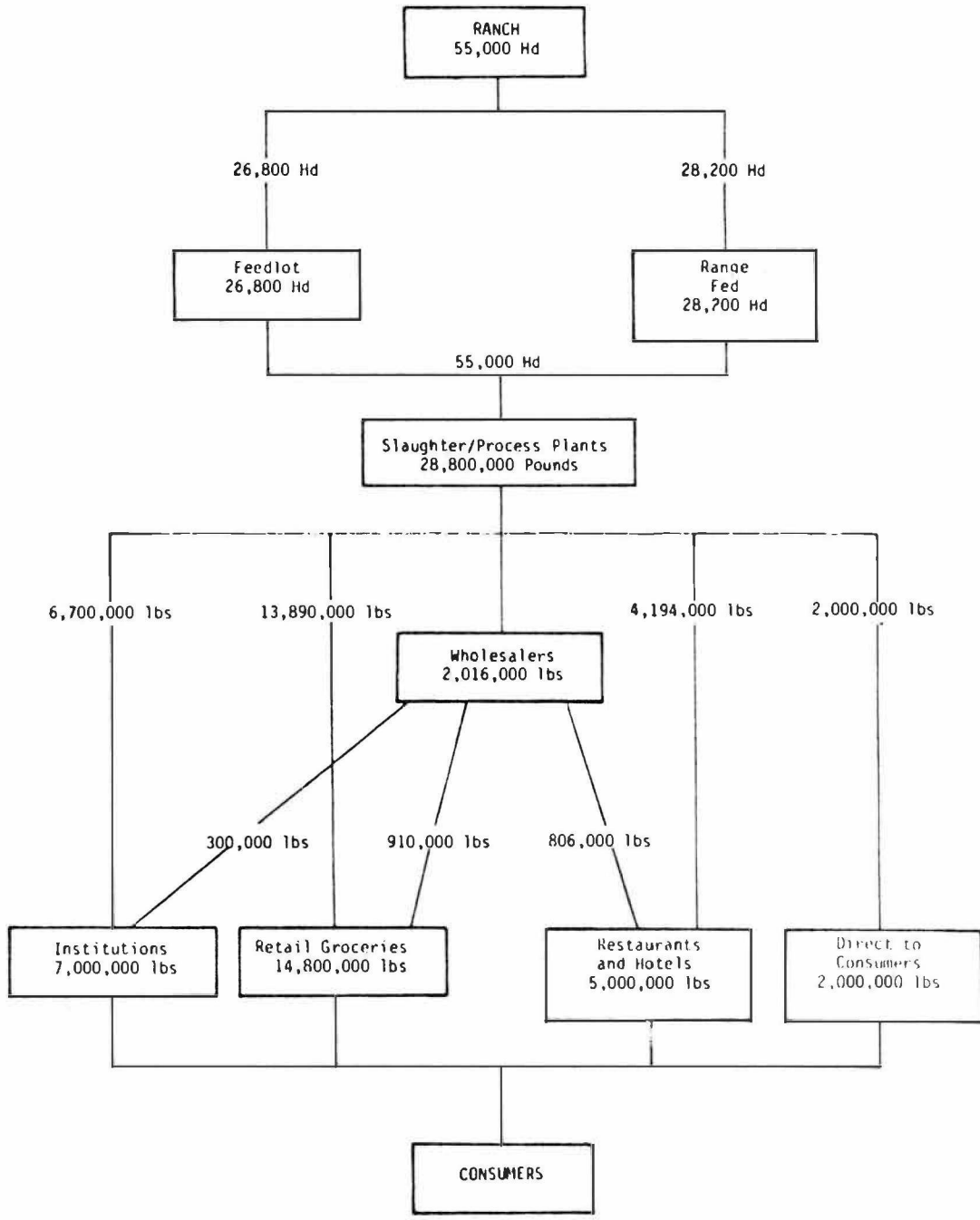


Figure 5 . Market Flow Of Slaughter Cattle From Ranch To Final Consumer, Hawaii, 1980
(Pounds are carcass weight equivalent).

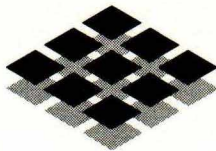
4. Since the Hawaii beef industry must compete with the Mainland beef industry on quantity, quality, and price levels, it must be able to produce, fatten, slaughter, and sell on a relatively equal cost basis, unless it is willing to accept lower profit margins than its counterparts on the Mainland.
5. As presently operating, the Hawaii livestock industry is not cost competitive with the industry on the Mainland. Grain, if fed to cattle, must be shipped from the Mainland as do most of the other inputs to cattle production. Current operating levels of feedlots and slaughter plants are at much less than capacity and rated capacities are much less than most facilities on the Mainland. Thus, economies of size achievable on the Mainland are not achieved in Hawaii.
6. Hawaii is a "pocket market" which means that Hawaii cattlemen are restricted to selling their cattle within their own local state market. This is also true for the sale of beef from Hawaiian slaughter plants. The reason is that no one is willing to pay transportation costs to the Mainland.
7. Major retail outlets in Hawaii (restaurants, hotels, and retail supermarkets) express concern that the Hawaii beef industry cannot supply beef in the form they desire (uniform weighted, trimmed cuts, vacuum packed primals and sub-primals, etc.) nor can it supply beef in the consistent quantities, qualities, and on the short notice that frequently is necessary for many retail outlets.
8. Slaughter plants in Hawaii lack the ability to establish permanent markets in many cases because they are unable to provide consistent quality and quantities of beef to retail outlets. This is because they do not control the supply of cattle entering the slaughter plants. Ranchers generally maintain ownership until slaughter and thus send cattle to slaughter when they determine is the time to do so. Coordinated marketing of livestock is generally non-existent throughout the entire livestock system.
9. Frozen beef imported from Australia and New Zealand is very acceptable to manufacturers of processed beef and hamburger. It is available in unlimited quantities, on short notice and the supply is reliable. Further, it is priced at rates the Hawaiian beef industry finds extremely difficult to compete with. Finally, while the Hawaiian beef industry is suffering hardships in terms of reduced markets, the beef consumers in Hawaii are able to buy certain types of beef at prices below that which would result if Australian and New Zealand beef was not imported into the state.

10. There is almost a complete lack of communication between and within the various segments of the industry. Ranchers do not fully understand the pricing system, members of one segment do not know what type of adjustments they should make in response to adjustments in another segment, and there is little coordination of activities among and between the various segments. This promotes a great deal of mistrust among these segments. Typically, the response to a suggestion that there is a need for the industry to "get together" is that it isn't possible because the largest ranch (and its feedlot and slaughter plant) is able to survive on its own and thus is not interested in discussing common problems and solutions. And, without them there is not enough volume to make feasible adjustments in the industry. Discussions with personnel from this ranch do not verify the conclusion that they are not interested in discussing common problems and solutions. In fact, their attitude is just the opposite. But due to the lack of communication in the industry, discussions have never taken place.

The demands being placed upon the cattle and beef marketing system in Hawaii are constantly changing. New technological developments in production, processing, and distribution and changes in the economic environment in which the various segments of the industry operate and changes in consumer demands must be adapted to if the industry is to survive. Above all it must be remembered that competition on the part of the various segments of the industry for increased profits through improved markets and methods of marketing is not limited to the beef industry in Hawaii -- the Hawaii livestock industry is an integral part of the U.S. beef industry and thus must successfully compete with its counterparts on the Mainland if it is to survive.

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NOTE: As part of a structural reorganization, the Hawaii Agricultural Experiment Station and the Hawaii Cooperative Extension Service have been merged administratively under the name HAWAII INSTITUTE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES, College of Tropical Agriculture and Human Resources, University of Hawaii.

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