

Dairy Products in the Diet

Oakland and Los Angeles survey studies dairy products as sources of protein, important minerals and vitamins

Jessie V. Coles

The third of a series of reports of a survey on the consumption of dairy products in urban areas of California made co-operatively by the Department of Home Economics, University of California, California State Department of Agriculture, and the United States Department of Agriculture under the authority of the Research and Marketing Act.

The consumption of dairy products by a large portion of representative families in Oakland and in Los Angeles was far below desirable quantities for good nutrition.

A seven-day survey of 424 Oakland and 513 Los Angeles families revealed that dairy products contributed a large share of the total requirements recommended by the National Research Council for several important nutrients such as protein, calcium, and the vitamin riboflavin.

Dairy products in this survey provided 23% to 26% of the calories, 40% to 45% of the protein, and 75% to 84% of the calcium recommended.

Dairy products also provided 59% to 76% of the recommended amounts of riboflavin, 35% to 39% of the vitamin A, 18% to 19% of the thiamin, and 5% to 6% of the total iron and niacin needs.

To determine the economic importance of dairy products in the diet, the survey compared the proportion of nutrients provided by dairy products with the proportion of the family food dollar that was spent for dairy products.

The families studied in Los Angeles spent about 20%, and those in Oakland about 18% of their total expenditure for food for dairy products. As is shown in the table, the proportions of calcium and riboflavin were very much higher, the

proportion of protein and vitamin A considerably higher, the proportions of calories somewhat higher than the proportion of the food expenditures, while those of thiamin were about the same.

These data seem to indicate that dairy products are a relative inexpensive source of some very important nutrients, especially of protein, calcium, and riboflavin. This is contrary to the belief of many families that dairy products are too expensive to include in the family diet.

Importance of Milk in Diet

Fluid milk—mostly whole milk—was the most important source of all the nutrients provided by dairy products. Families spent on the average from 9% to 10% of their food dollar for fluid milk, and received 13% to 15% of their recommended calories, 27% to 30% of the protein, 56% to 62% of the calcium, 46% to 59% of the riboflavin, 16% to 18% of the vitamin A, and 15% to 16% of the thiamin recommended.

The importance of milk as a source of nutrients is also shown when the proportions of nutrients supplied by milk are compared with those provided by all other dairy products combined. Families spent about 52% of their total expenditures for dairy products for fluid milk.

Milk provided about 57% of the total calories provided by all dairy products, from 66% to 68% of the protein, 78% of the riboflavin, 45% of the vitamin A, and 85% of the thiamin.

Cheese was the second most important source of the food nutrients. Families spent from 2.8% to 3.5% of their food dollar for all kinds of cheese which provided approximately the same proportions of the recommended amounts of calories and larger proportions of protein, calcium, vitamin A, and riboflavin. Cheese took from 15% to 17% of the total expenditures for dairy products, and provided 20% to 23% of the total protein provided by dairy products, and smaller proportions of other nutrients.

About 2% of the food dollar was spent for butter which was mainly important as a source of calories, providing 3.5% of the amount recommended; and of vitamin A, providing about 8.7%. Only insignificant amounts of the other nutrients were provided by butter.

Consumption by Age Groups

The average consumption of dairy products at home per 21-meal equivalent person was estimated for different age and sex groups by adding the average

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Proportions of Food Expenditures and Recommended Dietary Allowances Provided by Dairy Products.*

	Food expenditure		Calories		Protein		Calcium		Riboflavin		Vitamin A		Thiamin	
	Oak.	L.A.	Oak.	L.A.	Oak.	L.A.	Oak.	L.A.	Oak.	L.A.	Oak.	L.A.	Oak.	L.A.
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
All dairy products	17.9	19.9	23.1	25.8	39.7	45.4	74.6	84.0	59.0	75.8	35.5	39.4	17.9	18.8
Fluid milk														
Whole	8.6	9.4	12.3	13.7	24.7	27.3	50.9	55.9	42.1	53.5	15.7	17.4	13.9	14.5
Other	0.7	1.0	0.7	0.9	2.2	2.8	4.6	5.9	4.0	5.6	0.1	0.4	1.2	1.5
Half and half . . .	0.7	0.9	0.7	1.1	0.7	1.0	1.3	2.0	1.1	1.9	1.4	2.1	0.4	0.5
Cream	0.5	0.6	0.5	0.5	0.2	0.2	0.3	0.5	0.2	0.5	1.1	1.3	0.1	0.1
Evap. milk	0.7	0.6	1.3	1.1	2.6	2.1	5.6	4.5	4.6	4.3	2.1	1.7	1.0	0.8
Cond. and dry milk	0.1	0.1	0.2	0.2	0.2	0.4	0.5	0.9	0.5	0.9	0.2	0.2	0.2	0.2
Cheese	2.8	3.5	2.5	3.3	7.9	10.3	9.1	11.9	4.6	6.8	4.3	5.6	0.5	0.6
Frozen desserts . .	1.8	1.9	1.4	1.5	1.1	1.2	2.1	2.2	1.8	2.2	1.9	1.9	0.6	0.6
Butter	2.0	1.9	3.5	3.5	0.1	0.1	0.2	0.2	0.1	0.1	8.7	8.8	**	**

* Allowance recommended by National Research Council.

** Less than 0.1%.

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amount of milk consumed as a beverage by each group and the per capita consumption of other milk and other dairy products. These estimates were compared with the quantities of dairy products suggested by the United States Bureau of Human Nutrition and Home Economics in their food plans for good nutrition at moderate cost.

On the average, children 12 years and younger consumed more than the suggested quantities—from 8% to 25% more. Boys, from 13 through 20 years of age, averaged 4% to 19% more than the amounts suggested. The girls in this age group in Los Angeles consumed 2% to 11% more; the girls in Oakland, 4% to 11% less than the quantities of dairy products suggested.

Only one group of adults over 20 years consumed on the average more than the quantities suggested. The men from 21 through 29 years in Los Angeles consumed 22%, and those in Oakland 8% more than the suggested amounts. However, the women in the same age group consumed 12% to 14% less than the amounts suggested.

In all age groups over 30 years, men came nearer to consuming the suggested quantities than women. In Oakland, the men consumed from 20% to 32% less,

and in Los Angeles 1% to 18% less than the amounts suggested. The women in Oakland consumed from 30% to 45% less, and those in Los Angeles from 14% to 27% less than the suggested quantities. Women 70 years and over in Oakland consumed on the average 45% less than the quantities suggested.

A high proportion of the total suggested quantities of milk—and its equivalent in other dairy products—was consumed as a beverage in the younger age groups. The proportion was much smaller among older persons.

However, the average quantity consumed by a group of persons did not take into account the proportion of individuals who consumed less than the average. When the quantity of milk consumed as a beverage by each individual was compared with the total suggested quantity of milk and its equivalent, about three fourths of the children and adolescents up to 20 years consumed less than the suggested quantities. Almost nine tenths of the adults consumed less milk as a beverage than the total suggested quantities of dairy products. Almost 95% of the women consumed less than the amounts suggested.

The quantities of dairy products other than milk, and of milk not consumed as a beverage, decreased the proportions in each age and sex group which had not consumed the suggested quantities of

milk and its equivalent in other dairy products. However, when estimated quantities of these products were added to the milk consumed as a beverage, large numbers still consumed less than the amounts suggested.

About 26% to 40% of the children up to 12 years consumed less than the suggested quantities. This was also true of 50% to 64% of the adolescents in Oakland for 30% to 53% in Los Angeles. About 70% of the adult men, and at least 80% of the adult women used less than the suggested amounts.

The quantities of the different nutrients recommended by the National Research Council and the quantities of milk and its equivalent in other dairy products suggested by the United States Bureau of Human Nutrition and Home Economics in their moderate-cost food plan are not the minimum amounts upon which persons of different ages and sex could survive. Although information was not available for their complete diets, the extent to which the consumption of dairy products by certain adult groups fell below the suggested quantities, seems to indicate a rather serious lack in their diets and points to the desirability of increasing their consumption of dairy products, especially of fluid milk.

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EFFICIENCY

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plants are combined in a single plant. The costs indicated for the low-cost method are less than those actually observed with efficient operation, but they represent a level of cost that could be attained by reorganizing the transportation methods along the lines indicated in this report.

The estimates of costs in this study include the fixed costs of owning the equipment. Rental is possible, particularly for mobile equipment such as a fork truck.

For short-season operations, equipment rental costs are less than the annual fixed costs of owned equipment. Rental may, in some instances, make the use of mechanized equipment economical with a much shorter season than is indicated by the cost graphs.

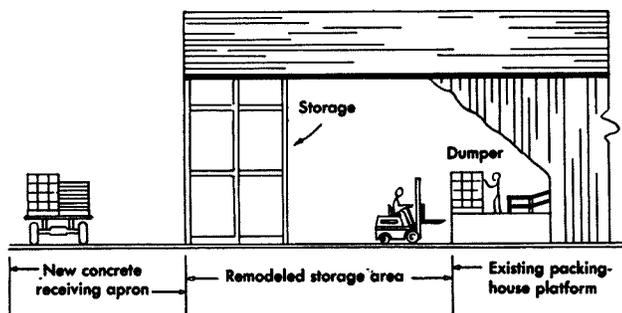
Although costs are a primary factor in selecting the most desirable type of equipment, other factors may also be important. In comparing hand truck and fork-truck equipment, the greater speed with which the grower's truck may be unloaded and the reduced number of workers required with fork-truck equip-

ment may indicate its use in situations where it may not be clearly justified on the basis of cost alone.

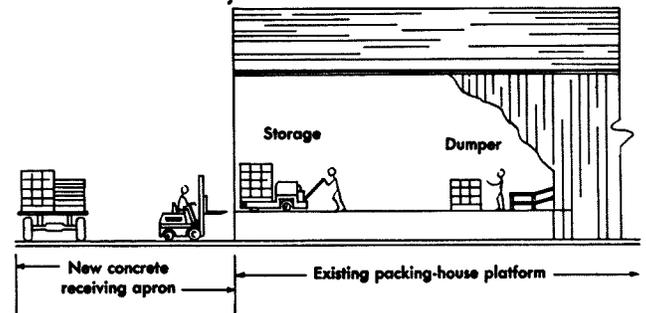
L. L. Sammet is Co-operative Agent of the University of California Agricultural Experiment Station, Berkeley, and the Bureau of Agricultural Economics, United States Department of Agriculture.

Other reports in this series compare house operations, methods, equipment, and arrangements. The comparisons may be used to establish standards for efficient and low-cost operation. With minor modifications, the results of these studies can be applied to many of the problems of packing and processing other fruits and vegetables.

Rearrangement of receiving area in hand truck packing house to permit use of fork-truck and powered hand truck equipment for the transport of incoming or cannery fruit.



(A) Hand truck plant remodeled to permit incoming fruit to be handled with fork-truck equipment.



(B) Hand truck plant, with incoming fruit handled with fork truck and powered hand truck.