

A Summary of Dairy Product Manufacturing Costs at Cooperative Plants

Testimony at the Federal milk order national hearing on Class III and Class IV milk price manufacturing allowances, in Alexandria, Virginia, starting on January 24, 2006, by K. Charles Ling, Business and Cooperative Programs, Rural Development, United States Department of Agriculture.

My name is Charles Ling. I am an agricultural economist with Cooperative Programs of Rural Development. I have served as its program leader for dairy, livestock, and poultry since 1988. Five years prior to joining Cooperative Programs in 1978, I was an agricultural economist with the Federal Milk Order No. 2 Market Administrator's Office in New York. I received my B.S. degree from National Taiwan University, and master's and Ph.D. from the University of Connecticut, all in agricultural economics. I am testifying for the record at the request of the Agricultural Marketing Service regarding the results of a technical assistance study of the cost of manufacturing dairy products at a number of dairy cooperative plants for 2004.

After publishing "Dairy Product Manufacturing Costs at Cooperative Plants (ACS Research Report No. 34)" in 1983, a group of cooperatives requested the then Agricultural Cooperative Service (ACS) to conduct an annual confidential technical assistance project to help in their cost comparisons. The cooperatives promised to provide data from selected plants to ACS for use in developing a database of cost information from large cooperative milk manufacturing plants. ACS would provide each cooperative with a report comparing a particular cooperative's plant(s) with other similar plants without disclosing individual plant data to others. Participation in the study is voluntary and is open to all dairy cooperatives. The 2004 plant cost study was the 20th year of the technical assistance project.

Cooperative Programs is authorized by the Cooperative Marketing Act of 1926 to conduct technical assistance studies. Section 3(b) of the Act directs it "To make surveys and analyses if deemed advisable of the accounts and business practices of representative cooperative associations upon their request; to report to the association so surveyed to results thereof, and with the consent of the association so surveyed to publish summaries of the results of such surveys, together with similar facts, for the guidance of cooperative associations and for the purpose of assisting cooperative associations in developing methods of business and market analysis." (7 U.S.C. § 453)

For the plant cost comparison technical assistance project, dairy products studied are butter, nonfat dry milk (powder), cheese and, if data are available, whey and other dairy products. Only in-plant costs are included.

The following instructions were given to the cooperatives for reporting cost data on butter-powder plants:

1. Scope of cost information: In-plant costs of moving milk from the receiving deck to the product delivery deck. Exclude milk procurement costs, transportation, administrative costs

(plant office, plant manager, and corporate overhead), interest, and costs associated with facilities for prolonged storage or offsite storage.

2. Milk received at the plant incurs a receiving cost. Cream and skim separated in the plant incur the costs of receiving and separating milk. Condensed skim incurs an additional evaporation cost. If milk, cream, skim, or condensed was shipped out of the plant, please ensure the accompanied receiving, separation, or evaporation, and shipping costs are taken out of the plant manufacturing cost.
3. If cream, skim, or condensed was received at the plant for further processing, allocate a cost to that product as if it had been separated or condensed at the plant. Cost incurred at the receiving bay should be noted also.
4. For direct cost items such as direct labor, electricity, and fuels, please ensure the dollars and physical units reported correspond to each other.

For reporting cost data on cheese plants, these two instructions replace the previous items 2 and 3:

1. If cream, skim, condensed skim or condensed whey, or other intermediate product was received at or shipped out of the plant, please make sure the product is allocated a processing cost. Costs incurred at the receiving bay for receiving/shipping the product also should be noted.
2. Do not include the cost of processing whey and whey products in cheese manufacturing costs.

Nine cooperatives submitted 2004 cost data on 17 cheese plants, 8 butter plants, and 16 powder plants. However, due to data incompatibility, one butter plant and two powder plants were not included in the database for preparing the final reports. A set of nine reports was prepared; each participating cooperative received a report comparing its plant costs with the average of all plants making the same product. These reports, like all technical assistance reports, carry this disclaimer: "This technical assistance report was prepared for the sole use of (name of cooperative). Its board and management may make any use of the report they deem appropriate, but Cooperative Programs will treat it as confidential to the extent provided for by law."

With the consent of the participating cooperatives, the results of the study are summarized and presented in the accompanying table. Simple average plant costs were 14.267 cents per pound of all cheeses, 17.019 cents per pound of 40-pound block cheese, 6.721 cents per pound of condensed whey solids, 11.545 cents per pound of dried whey, 18.137 cents per pound of butter, and 21.417 cents per pound of powder (nonfat dry milk). Using each plant's product volume as the weight, the weighted average costs were 13.295 cents per pound of all cheeses, 15.136 cents per pound of 40-pound block cheese, 6.549 cents per pound of condensed whey solids, 11.409 cents per pound of dried whey, 16.588 cents per pound of butter, and 16.816 cents per pound of powder.

In reviewing these cost data, several factors have to be kept in mind:

1. The cost analysis does not consider differences in product quality. Products of higher quality conceivably would require higher quality ingredients and more effort by labor.
2. The cost allocation procedure for a multiple-product plant may not be uniform among the participating cooperatives. Therefore, two plants having exactly the same operations and same total costs may show different unit product manufacturing costs.
3. The nature of a plant might affect its manufacturing cost. A plant used strictly for manufacturing purposes tends to have a relatively constant milk volume and is operated at a high rate of capacity. It is likely to have a lower cost than a plant for balancing milk supply.
4. There are regional differences in input costs, such as wages, electricity, and fuel rates. It is possible that an efficiently operated plant in one region might have a higher per unit manufacturing cost than a less efficient one in another region.
5. The proportion of butter in bulk and print forms may affect a butter plant's cost.
6. When categorizing various in-plant expenses into cost items for this study, different plants may have grouped them differently. Although this should not affect the total cost, care should be used in reading the individual cost items.

This concludes my statement.

2004 Dairy Product Plant Costs, USDA Rural Development Cooperative Programs Technical Assistance Project

Cost Items	Simple average					
	All Cheeses ¹	40-lbs block cheese ²	Condensed whey (solids)	Dried whey ³	Butter	Nonfat dry milk ^{3,4}
	-----Cents per pound of product-----					
Wages and benefits	5.406	6.046	2.363	2.887	6.883	6.798
Electricity ⁵	0.425	0.425	0.394	1.010	0.914	1.207
Fuels ⁵	0.874	0.756	1.636	2.267	0.948	3.821
Water and sewer ⁵	0.374	0.512	0.348	0.889	0.320	0.343
Packaging materials ⁶	1.835	1.944	0.000	0.940	2.769	1.375
Ingredients	1.662	1.752	0.043	0.196	0.194	0.016
Cleaning supplies	0.379	0.294	0.384	0.382	0.370	0.383
Plant and lab supplies	0.481	0.644	0.253	0.619	0.830	0.952
Laundry	0.095	0.021	0.060	0.095	0.042	0.082
Repair and Maintenance	0.785	1.144	0.449	0.672	0.748	1.783
Depreciation	0.793	0.900	0.494	0.835	1.541	2.033
Equipment rentals	0.617	1.673	0.048	0.314	0.260	0.302
Taxes	0.091	0.100	0.043	0.130	0.196	0.463
Insurance	0.118	0.081	0.082	0.172	0.213	0.516
Miscellaneous	0.332	0.728	0.125	0.138	1.909	1.343
Total simple average cost ⁷	14.267	17.019	6.721	11.545	18.137	21.417
Pounds of product per plant	62,265,377	69,057,421	26,528,521	59,518,997	36,302,275	31,359,689
Average cheese yield/cwt milk	10.4	10.7				
Average percent print butter					43.9%	
Number of plants	17	6	8	6	7	14
Total weighted average cost (cents per pound) ⁸	13.295	15.136	6.549	11.409	16.588	16.816

¹Predominantly Cheddar cheese in 40-pound, 640-pound, or 500-pound packages; may contain some other cheeses.

²Predominately Cheddar cheese in 40-pound blocks; may contain some other cheeses.

³Includes both condensing and drying costs.

⁴Predominantly nonfat dry milk; contain small amounts of buttermilk powder, whole milk powder, animal feed and others.

⁵For some plants, fuels represent utilities, which include electricity, fuel and water and sewer.

⁶Cost of packaging materials was likely affected by variations in packages across plants.

⁷Individual cost items may not add to total due to rounding.

⁸Using each plant's product pounds manufactured as the weight.