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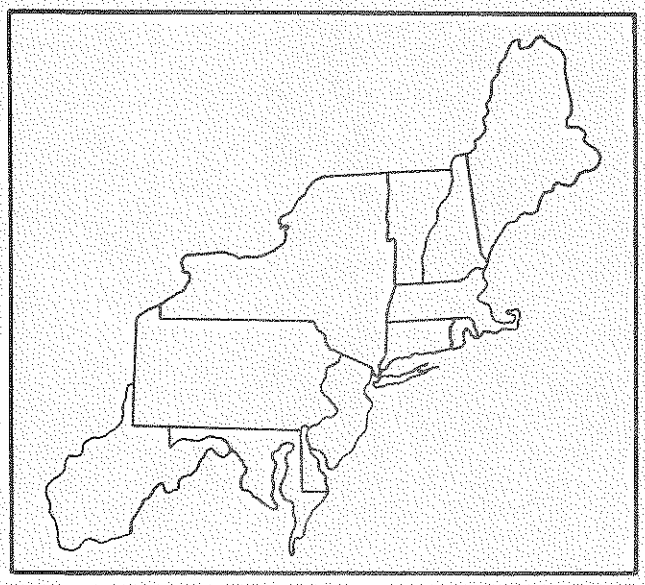

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COST OF BULK MILK ASSEMBLY

by

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Background

The movement of raw milk from the dairy farm to the milk processor is a key function in the milk marketing process. A straight, tandem axle truck with a 4,000 gallon tank or a tri-axle truck with a 5,000 gallon tank is commonly used to pick up milk at the farm. If the dairy farm is located near the milk processor (generally within 100 miles), the milk is delivered directly to the processing plant. A 6,000 gallon bulk tanker is commonly used if the bulk milk is hauled long distances (200 miles or more).

Recent Studies of Transportation Costs

The costs of moving bulk milk have increased substantially during the past several years. The rate currently reported in Ohio is $2.00 per loaded mile for one way distances of 200 miles or more, or round trip costs of $1.00 per mile. This rate is for bulk tankers with capacities of 5,900 to 6,100 gallons.

A wide range in hauling charges are assessed dairy producers in Ohio at the present time. The hauling rates vary according to farm location, milk volume, and the competitive environment. In the Columbus area, the average hauling charge currently paid by milk producers is 48 cents per hundredweight plus $2.50 per stop.

During the past decade, several other studies of the costs of transporting bulk and packaged milk have been made (Conner and McCullough, Kerchner, Lough, McBride and Boynton, and Moede, for example). In virtually all of these studies, transportation costs were synthesized from information obtained from trucking firms and milk equipment dealers, and then applied to specific truck sizes. The results of these studies made it apparent that no one transportation function can accurately reflect transportation costs in all situations. Differences in initial truck costs, labor and fuel costs, driving conditions, and maintenance policies all affect transportation costs for a specific haul.

Changes in Transportation Costs, 1969-1983

Estimated changes in transportation costs between 1969 and 1983 are reported in Table 1. These pertain to a three axle diesel tractor pulling a refrigerated, 36 foot trailer with a net weight of 25,000 pounds and a gross

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weight of 65,000 pounds. The following total cost functions were derived from the data of Table 1:

$$TC\ (1969) = 14.15 + .2473M$$
$$TC\ (1975) = 20.23 + .4199M$$
$$TC\ (1979) = 30.95 + .6866M$$
$$TC\ (1983) = 41.68 + .8320M$$

Where TC = total dollar cost per day

M = round trip mileage

The 1983 data can be used to approximate fixed costs for farm assembly with straight trucks. The cost of a tri-axle, straight truck assembled with a 5,000 gallon bulk tank is approximately equal to the tractor-trailer rig represented in Table 1. If we assume the truck specified above is driven 40,000 miles per year, fixed costs would be 32.5 cents per mile. When variable costs of 83.2 cents are added, total costs per mile would be 115.7 cents. In 1969, total costs per mile for operating this truck would have been 35.7 cents, or approximately 72 percent less than in 1983.

Between 1969 and 1983 fixed costs increased approximately 190 percent. Increases in equipment costs and related insurance costs account for this large increase. During this same period, variable costs increased by approximately 236 percent. Variable costs in all categories increased. As might be expected, driver labor and fuel costs increased the most, 250 percent and 267 percent, respectively.

Traditionally, labor costs have been the largest single component of variable costs associated with the movement of milk and dairy products. As shown in Table 1, labor costs continue to be the most important factor. In 1969, fuel costs accounted for 24 percent of total variable costs and driver labor costs for 33 percent. Fuel costs in 1975 again accounted for 24 percent of total variable costs, but driver labor costs accounted for nearly 43 percent. In 1979, fuel costs accounted for 29 percent of total variable costs and driver labor costs accounted for 38 percent. Driver labor costs increased 45 percent between 1975 and 1979. Fuel costs increased 100 percent during that same period. In 1983, fuel costs accounted for 27 percent of total variable costs and drive labor costs accounted for 35 percent. The assembly function continues to receive the close attention of the dairy industry because these costs continue to escalate.

TABLE 1. Transportation Costs for Hauling Bulk Milk in 6,000 Gallon Bulk Tankers, 1969-1983

	1969 a/	1975	1979	1983
Fixed Costs (per year)				
Depreciation:				
Tractor b/	$ 320	$ 358	$ 770	$ 1,200
Trailer c/	1,120	1,261	1,680	2,940
Interest d/	1,225	1,375	3,450	5,200
Road Tax (1.5¢/mile at 40,000 miles/year)	600	600	600	800
Licenses	650	1,056	1,056	1,056
Insurance e/	500	1,662	2,100	2,400
Total Annual Fixed Cost	$4,415	$6,312	$9,656	$13,596
Average Daily Fixed Cost (312 work days/year)	$14.15	$20.23	$30.95	$43.57
Variable Costs (per mile)				
Fuel (Diesel) f/	$.0600	$.1000	$.2000	$.2200
Tires	.0346	.0488	.0600	.1000
Repairs and Maintenance	.0342	.0520	.0800	.0880
Labor (Driver) g/	.0825	.1788	.2600	.2893
Depreciation h/	.0360	.0403	.0866	.1347
Total Variable Costs	$.2473	$.4199	$.6866	$.8320

a/ Adapted from Conner and McCullough, 1970.

b/ Based on purchase prices of $19,000 in 1969, $21,250 in 1975, $45,000 in 1979 and $70,000 in 1983. Ten percent of the capital is recovered on a straight line depreciation schedule for 5 years. The remaining 90 percent of capital is recovered through variable charges.

c/ Based on purchase prices of $13,000 in 1969, $14,600 in 1975, $20,000 in 1979 and $35,000 in 1983.

d/ Computed at 7 percent in 1969 and 1975, and 10 percent in 1979 and 1983 on the average amount of unrecovered capital (investment) per tractor-trailer rig.

e/ $100,000/300,000 bodily injury; $100,000 property damage; fire, theft; and $500 deductible on collision.

f/ Fuel costs were $0.27 per gallon in 1969, $0.45 per gallon in 1975, $1.00 per gallon in 1979 and $1.10 per gallon in 1983; fuel mileage was 4.5 miles per gallon in 1969 and 1975, and 5 miles per gallon in 1979 and 1983.

g/ Wage rate of $3.00 plus 10 percent fringe benefits per hour in 1969, $5.50 plus 25 percent fringe benefits per hour in 1975, $8.00 plus 30 percent fringe benefits per hour in 1979, and $8.90 plus 30 percent fringe benefits in 1983.

h/ Ninety percent of depreciation schedule for tractor to provide for capital recovery over 400,000 miles.

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