Frozen Strawberry Competition

California's slight interregional advantage could be reduced by small changes in the cost structures in competing regions

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The following article is the seventh in a series of progress reports on efficiency in the processing and marketing of frozen fruits and vegetables. The studies are being conducted cooperatively with the Agricultural Experiment Stations in Washington, Oregon, and Hawaii and the Agricultural Marketing Service, United States Department of Agriculture.

The frozen strawberry industry developed with exceptional rapidity in the years since World War II and is now concentrated in the states of California, Oregon, and Washington. Estimates of production, processing, and shipping costs of a recent study indicate that the West Coast states may be expected to continue as industry leaders.

In the study, it was assumed that retail consumers of frozen strawberries are unable to associate quality of product with particular producing regions. This means there would be no consumer-market price differences with respect to origin of product. Each market would be supplied by the producing region which could produce, process, and transport to the market at the lowest total unit cost. To reduce the problem to manageable proportions, broad production and consumption regions were defined with cost or consumption estimates derived for each.

Farm Production Costs

Farm production costs of representative commercial producers were estimated through group interviews of producers in each region. These estimates were based on the expected yield and the costs of all inputs including land, buildings, machinery expense, labor—including harvesting—and materials.

Regional farm production costs were found to fit roughly into three groups. The lowest cost—per pound—group is composed of Washington, 9.5¢; Oregon, 9.7¢; and California, 9.6¢. The next group is composed of Michigan, 11.5¢; Tennessee, 11.6¢; Virginia, 12.6¢; New York, 13.8¢ and Arkansas, 16.7¢. The highest costs were found for Louisiana, 23.1¢; and Florida, 25.1¢. The costs of some of these areas are obviously too high to allow serious competition in the frozen strawberry industry although their seasonal production enables them to furnish strawberries for the fresh market.

Processing Costs

Processing-cost differences among regions are comparatively small, but when included with other costs, are often sufficient to shift delivered processed product cost advantage among regions. Important determinants of regional processing costs are wage rates and other factor prices, processing techniques employed, and length of processing season. Wage rates are somewhat higher in the West Coast states—Regions 8, 9, and 10—than in other parts of the country, but the prices for other processing services differ little among regions.

Processing techniques are similar among regions. All regions—other than California—have strawberry freezing seasons of approximately the same

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length. Season lengths were estimated at 150 hours for Regions 3–7 and 200 hours for Regions 1, 2, 8, and 9 as compared with 1,000 hours in California. In regions in which strawberry freezing equipment is also used for processing other products, an allocation of equipment fixed costs was made to the different products processed.

Processing costs are lower in large plants, as measured by hourly capacity rate, than in small plants. In this study, it was assumed that all processing would occur in uniformly large plants unless expected regional output would not require large plants. In those cases processing was assumed to occur in smaller plants and unit costs were increased accordingly.

Because of a longer season and in spite of higher labor wage rates, California is able to process strawberries for freezing at a lower cost than any other region. Regions 1 and 2 follow California in processing cost advantage. The processing costs of these regions are slightly lower than the next group—Regions 3–7—because of the slightly longer processing season. Regions 8 and 9 have highest processing costs because of higher wage rates than other regions of similar processing season length.

The cost of frozen strawberries at a freezing plant in each region is composed of the costs of farm production and delivery to the processing plant, processing the berries for freezing, sugar, containers, and freezing. California, followed closely by Washington and Oregon, holds an advantage in total at-plant frozen product cost. Among eastern regions, Regions 2 and 4 have lowest frozen product cost.

Both rail and truck transport are used to move frozen strawberries, and the lowest cost method was assumed to be utilized in each interregional movement. Truck transport was estimated to be most economical at distances of less than 1,200 miles, and rail transport most economical at greater distances. Regions 8, 9, and 10—at a comparatively great distance from eastern consuming areas—have a transportation cost disadvantage of 1.3¢ to more than 2¢ per pound in most of the eastern United States markets.

Possible Production Pattern

A production pattern—toward which the industry could be expected to move—was estimated with a projected 1970 consumption and 1957–58 costs. Assuming the possibility of greatly increased output without increased cost, California—on the basis of least-total-cost—has a cost advantage for nearly all the frozen strawberry will be considered equal.

Regions 8, 9, and 10 will remain dominant in the frozen strawberry industry, but—contrary to the indications of a least-cost analysis based on present regional costs and returns—it is unlikely that Region 10 will expand to produce nearly all of the United States frozen strawberries.

Relatively minor shifts in regional costs and returns growing out of unpredictable future changes could greatly modify any industry adjustment based on least cost for the United States output of frozen strawberries.

Carleton C. Dennis was Co-operative Agent of the Agricultural Marketing Service, United States Department of Agriculture and the California Agricultural Experiment Station, University of California, Berkeley, at the time this study was made.

This brief report is based on a manuscript for a detailed report, "Interregional Frozen Strawberry Competition." This report will be available without charge from the Giannini Foundation of Agricultural Economics, 207 Giannini Hall, University of California, Berkeley.

HAY

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difference in favor of rolled hay, the absence of a satisfactory explanation in terms of chemical content raises some doubt as to the validity of any generalization based on this one set of tests. Experience has indicated that feeding results may vary somewhat in different groups of tests, probably because of biological variations.

Additional sheep-feeding trials at Davis with conditioned and unconditioned hay are planned for the fall of 1959.

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