

DAIRY TREND

Bigger Units, Better Cows

By Raymond O. P. Farrish

Dairy farms are becoming larger, production per cow is rising, and the number of dairy farms is decreasing. These interrelated trends are evident throughout the United States as well as in the Southwest. In Arizona, the trends are more pronounced.

Two Underlying Factors

Two economic factors have been responsible for much of the tendency toward larger and more productive dairy operations. The first has been the existence of economies of scale in dairy farming. The second has been the economies associated with higher producing animals. These factors explain much of the trends witnessed to date and suggest some possible future changes.

As early as 1958, researchers in the Department of Agricultural Economics of The University of Arizona reported the existence of economies of scale in Arizona dairy operations. Results of a survey conducted that year showed average costs of producing 100 pounds of milk decreased from \$7.18 to \$5.30 when herd size increased from 33 to 214 cows (Table 1).

Table 1. Effect of Herd Size on Average Cost of Producing 100 Pounds of Milk; Arizona, 1958

Herd Size (No. cows)	Costs per cwt.
33	\$7.18
49	6.81
87	6.40
214	5.30

Source: L. J. Moran and W. R. Greene, *Arizona Milk Production Costs*, Technical Bulletin 141, Agricultural Experiment Station, The University of Arizona, Tucson (June 1960).

Dr. Farrish is marketing specialist with the Agricultural Extension Service.

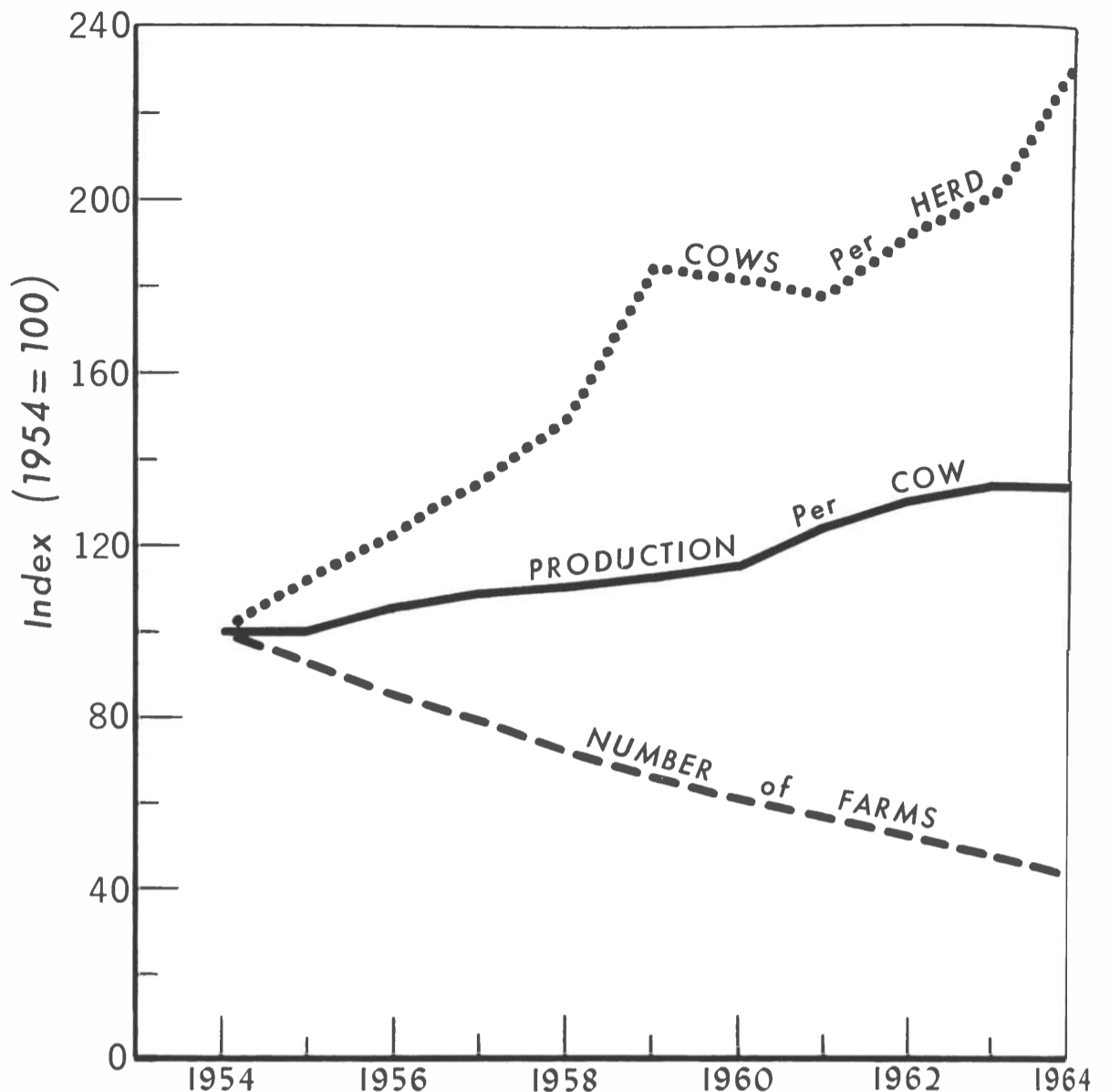


CHART 1 — Index number of cows per herd and production per cow for herds on DHIA test. Also, number of farms reporting milk cows; Arizona, 1954-64.

1). The magnitude of these economies provided a strong incentive for Arizona dairymen to increase herd size. Over the 10 year period 1955-64, the average size herd on DHIA test rose more than 130 percent (see Chart 1).

The 1958 survey also showed that high-producing cows, on average, produced milk more efficiently than their lower-producing sisters. Herds with average production per cow of over 10,000 pounds produced milk at less than half the cost of herds with a 5,000 pound average (Table 2).

Table 2. Effect of Production per Cow on Average Cost of Producing 100 Pounds of Milk, Arizona 1958

Production per Cow	Cost per cwt.
5,313	\$10.05
7,405	7.19
8,955	5.08
10,941	4.56

Source: Same as Table 1.

Production Went Up

The result was predictable. Through increased culling and greater use of the DHIA testing service, dairymen continued to increase production per cow. By 1964, herds on DHIA test attained an output of 12,570 pounds per cow (see Chart 1). On a statewide average, Arizona climbed from 9th to 2nd among the states in milk production per cow.

The increased efficiency of milk production has been a major factor in preventing retail prices of milk from rising more rapidly than they have. Over the past 10 years, for example, retail prices of milk in Phoenix have risen from 22.3 cents to 25.8 cents per quart. The increase undoubtedly would have been greater except for the fact that the average price received by farmers declined from \$5.33 to \$5.04 per cwt. over the same period (see Chart 2).

Future Implications

The same two factors, larger herds and greater output per cow, likely will

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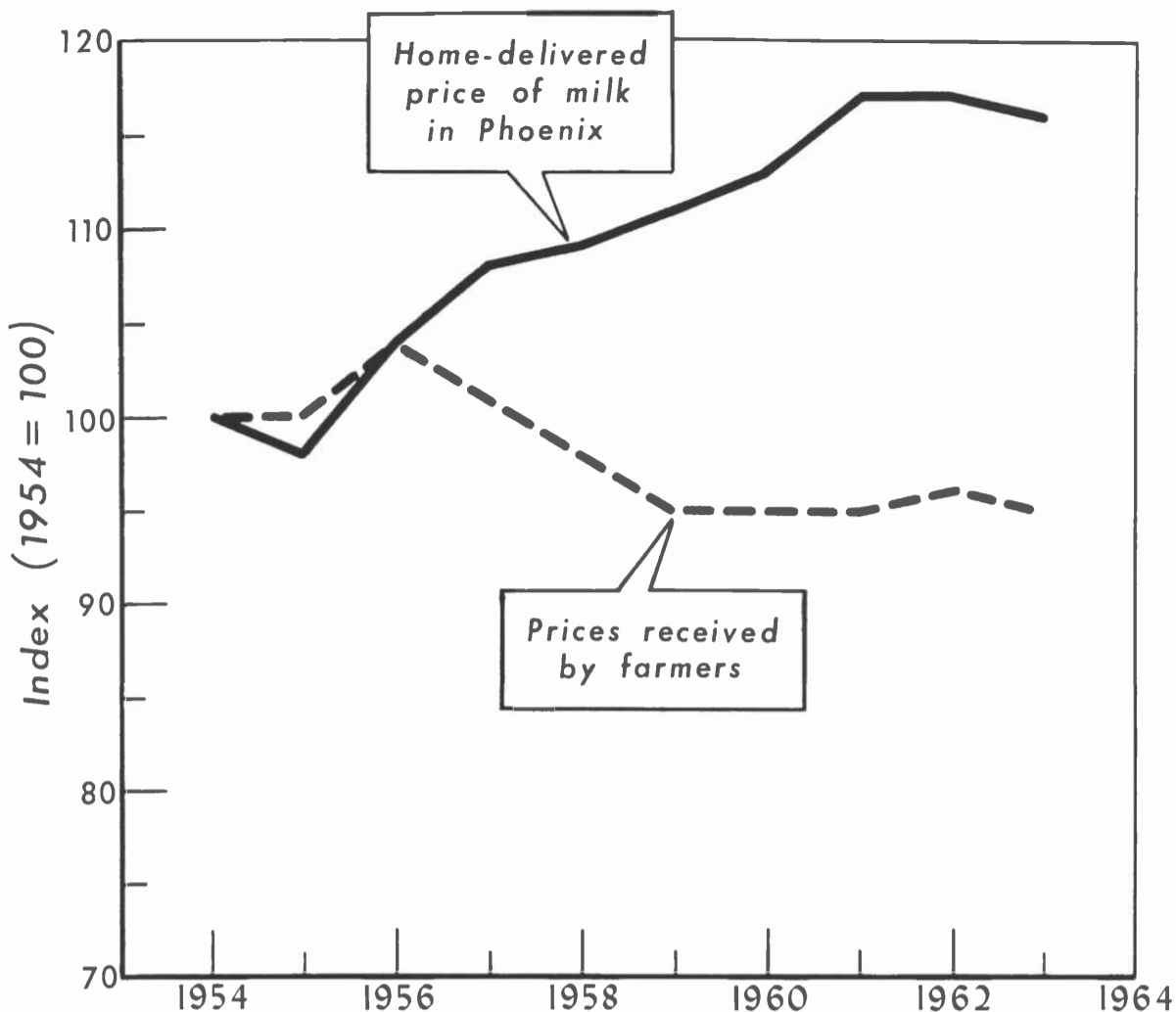


CHART 2 — Index numbers of retail milk prices in Phoenix and prices received by farmers.

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continue to provide future increases of dairy efficiency. The rate of increase, though, is likely to vary. Economic research indicates that dairies in the size range of 150 to 350 cows are most efficient size units. Most of the economies of scale are achieved at the 150 cow level. At present, the average size herd on DHIA test has reached 155 cows.

There still are smaller herds, and average costs for the industry will likely decrease as these expand. In general, though, the opportunity for cost reductions through increased herd size appears to be more limited than previously.

Opportunities for increased efficiency through higher output per cow still appear favorable. Herds in the DHIA testing program averaged 12,560 pounds of milk per cow in 1963. The average production of all cows in the state was 9,800. The difference — 2,760 pounds — probably is sufficient to enable a cost reduction of about 40 cents per hundred pounds of milk.

With such opportunities, and with the aid of an excellent DHIA program, it appears likely that dairy farmers will continue to strive for and achieve higher outputs per cow.

The Perilous Problems of World Agriculture

By George Campbell and John Burnham

The most important fact about world agriculture today is that total output is increasing — but not as rapidly as is population. Per capita production was less in 1964 than it was in 1958.

The next most important fact is that agricultural production is unevenly distributed among countries, and in relation to population.

One sixth of the world's population

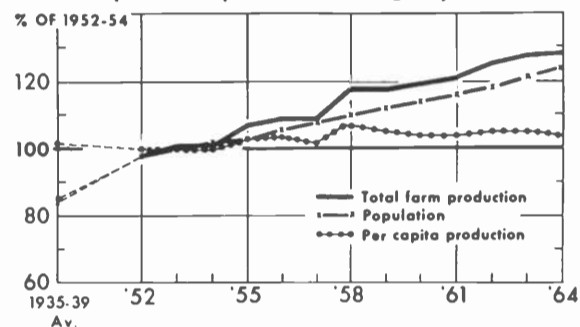
The authors are extension economist and experiment station editor, respectively. This is first half of a two-part article.

lives in countries having more than half of the agricultural lands. These countries include the United States of America, Soviet Russia, South Africa and the countries in Oceania and the River Plate subregions of South America, (Argentina and Uruguay).

At the other extreme, more than half of the world's population today lives in Asiatic countries which have less than one-sixth of the world's agricultural lands.

Two-thirds of this world's population lives in countries whose people do not have enough food, or the right kind of food, to give them an adequate diet. These diet-deficit areas include all of Asia except Japan and Israel, all of Africa except South Africa, the northern part of South Amer-

World: Total Farm Output Again High; Per Capita Output Down Slightly



ica and almost all of Central America and the Caribbean.

These people live in the "twilight belt" of hunger. There is never enough to eat — and any decrease in production pushes someone into the dark of starvation. Almost 90 percent of the diet-deficit people are in Communist China (62.4%), East Asia, excluding Japan (12%) and India (13.2%).

A geographer with the U. S. Department of Agriculture, Nelson P. Guidry, points out that "Adding to the imbalance between population and farm output are such factors as variations in climate, soils, patterns of agricultural production, and the level of agricultural technology."

It is true that progress in applying modern farming techniques has, to great extent, been most rapid in the highly developed countries which have skilled manpower and which also can more easily afford the needed large capital investment than can the poorer, undeveloped regions.

These are reasons why farm output per capita has been kept at high levels in temperate North America and

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