That means there is a three-to-one ratio of grain conversion to beef or 1.2 pounds of grain yielded 0.4 pound of edible beef. In addition to the meat, a wide variety of byproducts beneficial to humans and animals are produced—products such as leather from hides; drugs, essential for saving many human lives, from various glands and viscera; and meat-and-bone meal, a high-protein supplement for animal feeds.

Nutritional Comparison

The nutritional value one would derive from eating feed grains (corn and sorghum) normally fed to cattle compared to meat and other animal food products makes the three-to-one ratio look very favorable. Meat (beef, pork, veal, and lamb) contains 30 to 40 percent less energy than corn but contains twice as much high quality protein as corn or sorghum. Meat is unequaled by any cereal grain used for feeding livestock in both quantity and proportion of amino acids needed by humans for good health. A highly significant nutritional advantage of meat and other animal food products over cereal grains and higher plants is the presence of Vitamin B12 which is nonexistent in higher plant foods. Animal products are also excellent sources of Vitamin A as well as calcium, phosphorus, iron, sodium, potassium, magnesium, and copper.

Historically, meat has been an important part of man's diet. History also shows that consumption of meat and other animal products increases as countries develop and their populations become more affluent. The value of animal products to human nutrition was recognized at the 1974 World Food Conference by the recommendation of greater utilization of world animal resources.

Grain to Grass?

Production in this country of grains that could be used for human consumption is more than adequate to meet both livestock and food and industry demand. The CAST report reveals that, of total 1971 U.S. grain production, livestock consumed 84 percent of the sorghum, 86 percent of the oats, and 77 percent of the corn compared to 0.8, 5.0, and 7.5 percent of these respective grains utilized for food and industrial purposes. This indicates there has been no need for a high proportion of the U.S. grain supply to go into human food. Wheat, which is readily utilized by humans, had 35 percent dis-

tribution to food and 22 percent to livestock feed. The percentage of these crops exported included: sorghum, 15 percent; oats, 3 percent; corn, 15.3 percent; and wheat, 43.0 percent. If these grains were needed for human food in the United States or any other country, demand would increase prices to the point where it would be prohibitive to feed them to livestock. In the last year feed grain prices increased for a variety of reasons and forced a sharp reduction in the number of cattle being grain fed.

Moral Obligation

Many argue the humanitarian aspects of this issue and the obligation of Americans to feed the starving people in the world. But, regardless of our humanitarian or moral obligation, the basic underlying question of who will pay for this action must be answered. Without some small profit incentive, farmers will not produce needed grain, grain dealers and exporters will not buy and sell, and shippers will not transport the grain to starving nations. The humanitarian approach is noble but leaves many vital questions unanswered.

Conclusion

Meat and other animal products have always been an important part of the American diet and they will continue to be valuable in fulfilling human nutritional needs. Future availability of grain-fed beef will depend, as it always has in the past, on supply and demand of both feeder cattle and feed grains. If world feed grain production, particularly in the United States, does not recover quickly from the recent slump, strong demand for feed grains may force a continuation of the sharp reduction in the number of cattle being fed grain that occurred within the last year. The decision of whether cattle will be fed grain in the last phase of beef production or kept entirely on a forage ration will be determined by profit incentive — not by humanitarian pleas of individuals who have adopted this issue as their "cause."

Reference

Council for Agricultural Science and Technology, 1975. Ruminants as Food Producers Now and for the Future. Special Publication No. 4. Council for Agricultural Science and Technology. Department of Agronomy, Iowa State University, Ames.

Aspects of the Food Problem

David A. Zarkin

Abstract

Comments by Willard W. Cochrane, agricultural economist at the University of Minnesota, are presented regarding important factors of the world food problem.

David A. Zarkin is assistant professor of agricultural journalism at the University of Minnesota.

On the earth today there are almost 4 billion people — 200,000 more than there were yesterday. By the year 2000 there will be 2.4 billion more people than there are today.

An estimated 10,000 people die each week from lack of food and the United Nations reports that almost 400 million suffer from protein and energy malnutrition. Total food production has increased 2.9 percent per year in the developed world and 2.6 percent per year in the less developed world, excluding Mainland China. This favorable record resulted in part from bringing new land into production and in part from technological advances.

Who Will Go Hungry

But agricultural economist Willard W. Cochrane of the University of Minnesota, St. Paul, points out that the poor and downtrodden in less developed countries, where the birth rates almost double those of industrialized nations, are likely to go hungry in the decade ahead even if food production growth rates of the 1960s are reestablished. He predicts a bleak future with a highly probable rise in the real price of food over the next several decades. "Is there no hope? Hope must rest on some major technological breakthrough in energy production and crop production. The probability of such breakthroughs occurring I leave to you." Professor Cochrane savs.

Food production in less developed countries from 1968 through 1971 increased rapidly as a result of the so-called green revolution. Some of these gains have been set back as some nations, recently made self-sufficient in food, have met hostile weather and materials shortages. Food production in less developed countries leveled off in 1972, rose again in 1973, and has leveled off again in 1974 as a result of bad weather.

Production Growth

Production growth from 1968 through 1974 in the developed world was almost identical to that in the less developed countries, Cochrane says. A per capita growth rate of almost 2 percent per year from 1958 to 1974 for food production in the developed world resulted in surpluses in some periods and rapid increases in the quality of diets in the developed countries since 1965. On a per capita basis, food production in the less developed countries held about constant from 1958 through 1974, rising noticeably from 1968 to 1971 with the green revolution and falling below the trend in 1966, 1972, and 1974 with poor cropping weather. Cochrane concludes that population growth in the less developed countries "literally ate up the great gains in agricultural production of the less developed countries from 1958



through 1974."

The present world food crisis involves soaring food prices in the developed countries and hunger and starvation in many less developed countries. Poor harvests in 1972 and 1974 brought on the crisis aspect, but Cochrane lists other aspects to the current problem:

- Rapid increases in meat production in the developed world since 1965 and increased demand for grains.
- Rapid drawdown in United States grain stacks in 1972-73, a bad crop year, to sustain the developed meat production increases.
- Skyrocketing energy and fertilizer prices and the consequent balance of payments problem in energy-deficit less developed countries.

To keep millions of people in South Asia and Africa from starving, Cochrane said, in November 1974, that total food aid to less developed countries, which fell from about 12 million tons of grain in 1970-71 to about 7 million tons in 1973-74. must increase to about 12 million tons and perhaps to 15 million tons in 1974. Since there were no reserve stocks to supply this grain, it would have had to be pulled out of livestock production in the developed countries and it was doubtful that this would happen. To the best of our knowledge, these increases were not met. It is difficult to know what the situation is, particularly in India. We are not getting news reports and this leads some to wonder if a news blackout is in effect. One may guess that many people have starved, but we do not know for certain as of this writing. In Africa, the drought broke last fall, but even there the situation has not been made public.

Cochrane believes there is a possibility that food production trends of the 1960s will return in the late 1970s and 1980s, but only at higher costs resulting from higher energy costs, use of higher-cost land, and increased cost of irrigation. And in the next 10 to 20 years, surplus grain production will be unavailable for consumption in less developed countries if these supplies are used to produce more meat in the developed countries, which at present seems highly likely, he adds.