

Photograph

Emerging Issues

CONGRESSIONAL
CLEARINGHOUSE
ON
THE FUTURE

EARLY
SIGNALS
OF
CHANGE

Issue:
INFORMATION AGE
Date:
DECEMBER 1989

FOOD AND AGRICULTURE IN THE INFORMATION AGE

A new battleground for high-technology is the food and agriculture industry. The traditional farm to dinnertable path has been radically altered by technology as international competition, nonfood agricultural products, new consumer markets, and complicated distribution networks guide and constrain the U.S. agricultural system. New information technologies are reshaping basic relationships that govern U.S. food and agricultural markets.

A new report from the Congressional Office of Technology Assessment (OTA), *Technology and the American Economic Transition* persuasively argues that the impact of information technologies on America's agricultural sector is much more extensive than conventional measures show. Information technologies are, in large part, responsible for worldwide markets for high-value food products. Year-round availability of popular fresh fruits, such as cantaloupes and pineapples — only possible through winter importing which, in turn, is made possible through an information and transport system that relies heavily on computer and communications systems — has helped boost domestic demand by reshaping the shopping and eating habits of millions of Americans.

Many lucrative domestic markets are dominated by foreign producers who have aggressively marketed desirable new food and beverage products to U.S. consumers.

Many lucrative domestic markets are dominated by foreign producers who have aggressively marketed desirable new food and beverage products to U.S. consumers. But American producers are rising to the challenge. For example, domestic production of Granny Smith apples and kiwi fruit are now challenging foreign producers who once held commanding positions in U.S. markets. In 1989, U.S. production of these two products alone is expected to be \$50 to \$80 million.

Future economic leadership in agriculture could depend, in large measure, on U.S. efforts to identify and exploit emerging non-food markets.

The network of businesses that bring food to American plates is among the most technologically sophisticated operating in America today. New packaging materials reduce shipping weights and improve freshness, often without the need for preservatives. Laser checkout machines make it possible for stores to keep track of 30,000 different items simultaneously. Advanced communication systems tie national and international producer-distributor networks together. A variety of information technologies are improving farm productivity (computer-based dairy management) and food manufacturing (numerically controlled processing facilities).

Future economic leadership in agriculture could depend, in large measure, on U.S. efforts to identify and exploit emerging non-food markets. Biological materials can be used as a low-pollution energy resource and as a feedstock to make plastics, industrial chemicals, and many other high-value materials. Australia, Canada, and Brazil are actively targeting development of these new agricultural products and methods.

Business leaders in the food industry are looking at new opportunities for the productive use of information technologies, and many experts are urging policymakers to adopt new proposals that harness and adapt information technologies to deliver safer and cheaper food supplies to domestic and international markets. A number of key trends show emerging challenges likely to confront agriculture industries and policymakers in the U.S.

TRENDS

Food-production jobs are shifting away from the farm to the service sector — most food industry workers are salespeople, restaurant employees, precision craftsmen, managers, and data entry clerks

Demographic factors are dramatically reshaping American food consumption patterns. For example, an increased number of working women has led to growth in restaurant eating and convenience food demand. Greater concern and knowledge about health apparently has led to a decline in consumption of red meats and other sources of cholesterol and to an increase in consumption of fish, poultry, low-fat milk, fruits, and vegetables.

Food-production jobs are shifting away from the farm to the service sector — most food industry workers are salespeople, restaurant employees, precision craftsmen, managers, and data entry clerks. Most of the 17 million food and agriculture related jobs are not located on the farm. In 1984, 4 out of every 100 jobs in food production were held by farmers; an equal number of lawyers, bankers, scientists, and accountants were employed in food-related occupations.

A decreasing percentage of expenditures for food flows back to the food producer. Nearly 60 percent of the value added is captured by the food processing, distribution,