

# Food and Agriculture: Consumer Trends and Opportunities

## Vegetables

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This publication describes the trends in consumption, nutrition, health, lifestyle, and marketing for the vegetable sector of the agricultural economy. This publication is part of a series that seeks to integrate the consumer aspects of food and agriculture in an effort to help Kentucky vegetable farmers. Each publication is organized around the USDA's Food Guide Pyramid. The series is designed to bridge gaps in understanding about the economics of food consumption, health and lifestyle trends, and food production and to provide a resource for food marketing efforts. The following information should be helpful for farmers wanting to better understand consumers and their consumption patterns. Consumers may gain a better understanding of the nutritional implications of their diet.

### Vegetable Consumption Trends

Which vegetable products do consumers purchase? Figure 1 shows the trends in domestic per capita consumption (in pounds) for fresh, canned, and frozen vegetable products from 1970 to 1995. These data are based on the disappearance<sup>1</sup> of the vegetable supply, rather than actual vegetable consumption. Generally, disappearance data overestimate consumption. However, by keeping track of disappearance trends over time, researchers can determine relative changes in vegetable products consumed.

Fresh vegetables were the primary source of vegetable consumption during the last quarter century. Although there were periods in which consumption fell temporarily, the overall increase was 13 percent, from 152.9 pounds in 1970 to 173.5 pounds in 1995. Canned vegetable consumption largely remained flat throughout the period, but recently ticked upward from 1990 to 1995. Overall, canned vegetable consumption increased 9 percent from 100.7 pounds in 1970 to 109.8 pounds in 1995. Frozen vegetable consumption, however, grew by 87 percent during the last 25 years from 43.7 pounds in 1970 to 81.8 pounds in 1995. Changes in relative prices, income, preferences, and advertising have largely shaped these trends.

Staples such as cabbage, celery, sweet corn, head lettuce, onions, potatoes, and tomatoes make up

roughly three-quarters of per capita consumption of fresh vegetables. With the exception of potatoes and tomatoes, the demand for staple fresh vegetables has been roughly flat from 1970 to 1995.

Figure 2 highlights four fresh vegetables that have realized rapid gains in per capita consumption.

Figure 1. Per Capita Vegetable Consumption (Pounds), Disappearance Data: 1970-1995



<sup>1</sup> This term, as defined by the USDA-ERS, means beginning food stocks, production, and imports minus exports, shipments to the U.S. territories, and ending stocks. So it is a reasonable proxy for consumption, given that data for consumption is not collected overall.

Broccoli consumption increased 540 percent from 0.5 to 3.2 pounds, while bell pepper consumption increased 164 percent from 2.2 to 5.8 pounds from 1970 to 1995. Carrot consumption rose 68 percent from 6.0 to 10.1 pounds during the same period. After a 12-year plateau from 1970 to 1981, tomato consumption edged upward 37 percent, ending 1995 at 16.6 pounds.

**Figure 2. Per Capita Consumption (Pounds), Disappearance Data: 1970-1995**

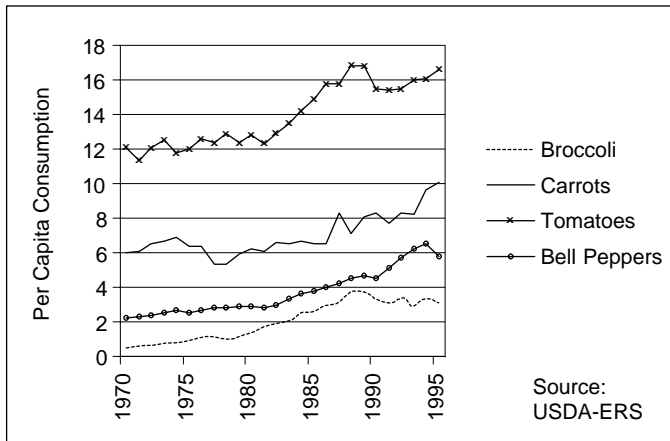
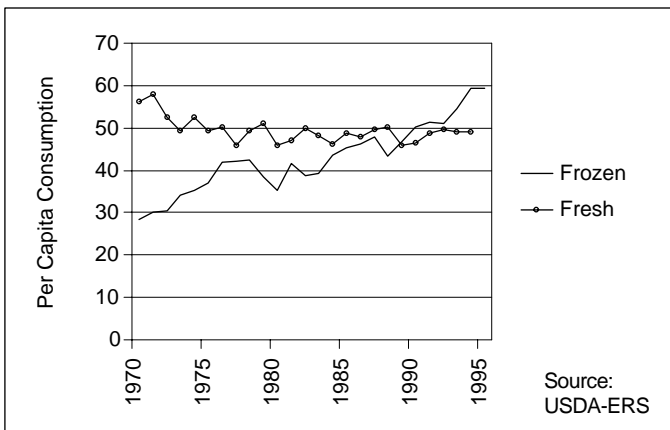


Figure 3 shows a gradual decline in fresh potato consumption. The potato is preferred by consumers today in frozen forms such as shoestring fries rather than fresh. Juxtaposing the results with those in Figure 1, we notice that fresh potato consumption has rapidly shrunk as a percent of total fresh vegetable consumption. In 1970, potatoes comprised 40 percent of all fresh vegetables consumed. In 1995, that figure was only 28 percent. However, per capita frozen vegetable consumption increased 108 percent from 28.5 to 59.3 pounds in the last 25 years.

**Figure 3. Per Capita Potato Consumption (Pounds), Disappearance Data: 1970-1995**



## Vegetable Consumption Is Increasing

Health, taste, and convenience are the factors driving the increased consumption of vegetables, in particular more fresh and frozen vegetables. Consumers are eating more nutrient-dense vegetables, such as broccoli, bell peppers, carrots, and tomatoes. New convenience packaging has made consuming vegetables easier. Pre-packaged, peeled, baby carrots, mixed dark greens, and broccoli florets are bagged in small portions. These products are ready-to-eat or ready to add to fast, one-dish meals such as salads, stir-fry dishes, or casseroles. Tomatoes have become popular again as an ingredient in many tomato-based ethnic foods. Many new exotic produce items, such as specialty lettuces and peppers, have been introduced or expanded in the last decade. Romaine and dark green leaf lettuces are gaining popularity over iceberg lettuce. These trends reflect consumers' changing demand for vegetables.

Although a greater number of Americans are eating more food away from home and are consuming more processed foods, there are opposing trends as well. Gardening as a hobby is one of Americans' favorite pastimes. Cooking for pleasure and health is also ranked high. Market research studies have identified changes in consumer attitudes toward environmental issues regarding food production and safety. Consumers are seeking more information from food labeling to guide their food choices.

Consumers also have a greater number of market venues for purchasing fresh produce. The number of health food, gourmet, and ethnic food stores is rising. Markets that sell directly to consumers are growing. The number of farmers' markets has risen nationally and in Kentucky. Many retail and large supermarket stores are offering greater sales of environmentally friendly products and locally grown produce. Internet sites are now available to consumers to purchase vegetable produce and other products.

## Diversity in Vegetable Marketing

Kentucky farmers sold more than \$31 million in commercial vegetable produce in 1996. Many farmers are identifying ways to increase the sale of their produce and to promote the attributes of health and freshness of their farm produce. Several new direct marketing mechanisms have been developed or expanded such as produce auction markets, buying clubs, community farmers' markets, wholesale distribution centers, and marketing cooperatives. The Kentucky Department of Agriculture offers labeling designated for fresh produce grown in Kentucky and provides an

organic certification program for farmers wishing to promote their vegetables as organically grown. The Kentucky Farm Bureau Federation has a statewide advertising and promotion program for roadside markets.

Kentucky farmers have had profitable enterprises in tomatoes, pumpkins, cabbage, peppers, and sweet corn, and interest in vegetable production in Kentucky will likely continue to increase. As the market and production segments continue to consolidate, many farmers may form partnerships or expand their operation to compete in the wholesale markets. Others may look for opportunities in the local direct sales of produce. While direct marketing can be a way for farmers to keep a larger share of their profit, it may also limit the growth potential in their operation.

Consumers can benefit from the greater selection of fresh produce both at retail and direct market outlets, such as farmers' markets. Typically, these markets have six to ten farmer members who sell produce. Members typically pay a fee to cover insurance and advertising costs. Consumers approach individual growers to purchase a variety of produce ranging from corn to cantaloupe. Produce is sold by weight or by the count. Many farmers' markets accept WIC food vouchers from limited-income families. Some markets have special events with activities that promote farm produce, and some offer fresh produce and value-added products such as homemade breads and jams and jellies.

Buying clubs are one of several new marketing mechanisms for selling fresh produce directly to consumers. (CSA channels are a similar kind of mechanism.) The Organic Kentucky Producers' Association in the Danville and greater Lexington area offers two buying plans, both of which include a non-refundable \$25 member fee and a small delivery charge. The difference between the two plans is the amount of produce delivered. A variety of produce is offered during the 24-week season. For example, a typical spring box includes turnips, beets, cabbage, potatoes, spinach, strawberries, leaf lettuce mixes, radishes, broccoli, peas, and tomatoes. Weather conditions may affect the availability of some of the produce. The advantages of the buying club approach is that consumers help share the production costs with the farmer in return for a steady supply of fresh produce during the season. Home delivery can be convenient for time-conscious consumers, and the buying club approach gives farmers a pre-determined, consistent market and customer base. Several CSAs and buying clubs sell both organic and nonorganic produce.

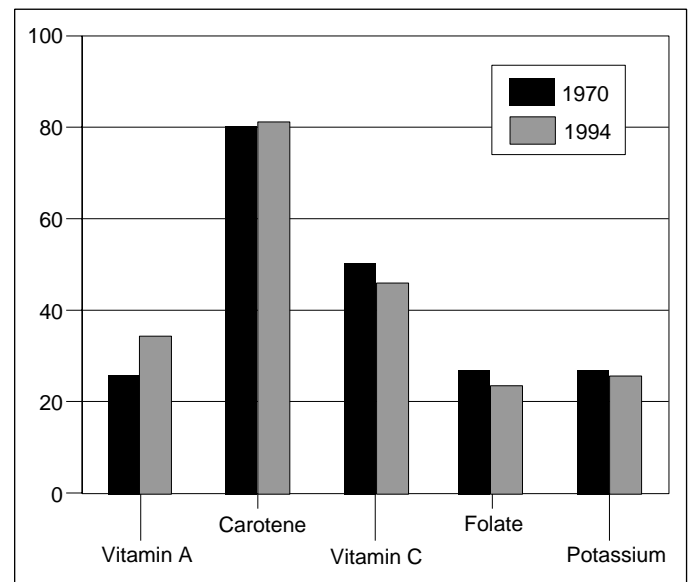
## Vegetable Nutrition and Health

Because fruits and vegetables supply many similar nutrients, their consumption is often tracked as a composite. From 1970 to 1995, consumption of fruits and vegetables has increased 22 percent per capita (Putnam and Allshouse, 1997). Eighty percent of this increase has occurred since 1982 (Figure 1), when the National Academy of Sciences (NRC, 1982) published a landmark report *Diet, Nutrition, and Cancer*, which emphasized the importance of fruits, vegetables, and whole grains to promote health and reduce risk of cancer.

Vegetables, unless fried, are relatively low in calories while supplying many needed nutrients. Throughout the world, vegetables provide less than 5 percent of total energy (AICR, 1997). This is true in the United States, where vegetables have contributed approximately 5 percent of calories throughout the 25-year period from 1970 to 1995. Despite their small contribution to calories, vegetables consistently provide significant amounts of important nutrients to the U.S. food supply, as shown in Figure 4. As a plant-based food, vegetables are a source of "phytochemicals" (chemicals from plants), antioxidants, minerals, and dietary fiber to help decrease disease risk.

While increased vegetable consumption is generally consistent with dietary recommendations for good health, this does not hold true for the current trend in potato consumption. Frozen potatoes, potato chips, and shoestrings accounted for more than 10 percent of total supplies (farm-weight basis). These higher-fat versions of potatoes are a popular fast-food and

Figure 4. Percent of Total Nutrients Provided by Vegetables in the U.S. Food Supply, 1970 and 1994



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snack choice. However, another food trend, increased consumption of ethnic foods and the associated increase in canned tomato products, may be good for health. Tomato products are rich in nutrients. Americans are also choosing dark green, carotene-rich lettuces, such as romaine and leaf lettuce, over the less nutrient-dense iceberg variety.

The health message about fruits and vegetables is the basis for the “5-A-Day” program which promotes eating at least five servings per day of fruits and vegetables (National Cancer Institute, 1997). In Kentucky, only 17 percent of adults eat the recommended 5-A-Day servings of fruits and vegetables (Kentucky Department for Public Health, 1997). In the U.S., self-reported intake of vegetables averaged 3 1/3 servings per day during 1994-96 (USDA, 1997). However, consumer awareness of the 5-A-Day recommendation increased from 8 percent in 1991 to 39 percent in 1997 (Produce for Better Health Foundation, 1999). As Americans become more aware of the health benefits of vegetables, producers and processors will have opportunities to supply these nutritious, colorful foods to informed consumers.

## What You Can Do

The food choices we make within our food and agricultural system impact our local, state, and national economy, the environment, and the well-being of our communities, as well as our own personal health. Here are some practical things you can do:

### As a Consumer

Learn more about your community food system and the origins of your food purchases. Determine if your neighborhood food stores and restaurants use and sell Kentucky produce. Join a vegetable buying club or frequent a farmers’ market for fresh, locally grown produce. Read food labels for health and nutrition information.

### As a Community Leader

Establish a local farmers’ market. Work with your local Cooperative Extension Service office or chamber of commerce to promote local agricultural educational and economic development activities.

### As a Farmer

Learn about your customers’ needs and wants. Educate consumers about farming and the farm produce you market. Join community organizations that foster interest and support in farming. Learn more about the costs and benefits of value-added agricultural opportunities.

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