

Changing Market Institutions and Trends in Food Consumption

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by

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Introduction

In recent decades, significant changes have been occurring in the socio-demographic and economic structure of the U.S. population. These changes, in combination with technological advancements in agriculture and marketing, and changes in consumer lifestyles, tastes and preferences, are influencing the demand for food. Although, total per capita food consumption remains relatively stable from year to year, the mix of foods consumers buy has been changing rapidly. Over time, Americans have shifted away from diets rich in animal products, turning their attention towards fruits and vegetables, cereals, and other crop products. Moreover, today's consumers seek convenience, demand speed in food preparation, and are concerned with health and nutritional issues.

The food supply of the U.S. consumer is satisfied primarily through indirect markets such as grocery stores and supermarkets. Recognizing the importance of fruits and vegetables in the diet, consumers are renewing their interest in farmers' markets and roadside stands. These direct markets are emerging as alternatives to the traditional supermarket because they offer high quality produce at competitive prices.

Changing food consumption patterns as well as emerging sources of food supply are impacting the entire food industry. At one time, food demand was predominantly supply orientated. Now, consumer stated tastes and preferences as well as the economics of supply are increasingly influencing the demand for food. Hence, leaders in the food industry have recognized the importance of both socio-demographic and economic trends as they develop and market food products. To insure industry growth, food professionals should continue to monitor the activities and lifestyles of the buying public.

Policy makers, as well, must be aware of the structural elements of food demand in order to improve the effectiveness of public policies aimed at the well-being of farmers, consumers, and institutions involved in the marketing of food and fiber products (Capps, 1986). The food industry accounts for a significant portion of the U.S. Gross National Product. One out of every ten workers for an average of 12 million full time employees are associated with the food marketing system (National Food Review, 1986). Jobs in food production retailing, processing and distribution accounted for 129 billion dollars worth of income generated in 1987.

Not including imported foods and seafood, consumers in 1987 spent about 375 billion dollars on food produced on U.S. farms. Of this total, 63 percent was spent for food at the grocery retail level, the remaining 37 percent being spent on food away from home (USDA, April, 1988).

This paper discusses three issues that are of interest to the food industry. Special emphasis will be given to fresh and processed fruits and vegetables. In the first section of the paper, an overview of food consumption trends in the U.S. within the last two decades is presented. Changes in demographic and economic factors along with marketing innovations and promotional schemes are also examined in this part. In the second section, direct market outlets and consumer preferences for these outlets are outlined. Direct market outlets as sources of fresh produce are growing in popularity. A number of states have conducted in-depth studies on consumer preferences for locally grown fruits and vegetables. The results of these studies will be summarized in this part of the paper. Finally, in the last section, an overview of the international marketing of fresh and processed fruits and vegetables is presented. Oklahoma's opportunities for future involvement in export markets (primarily fruit and vegetable) are also discussed in this part. Readers interested primarily in the international aspect of fruit and vegetable marketing may want to progress directly to the last section.

Overview of Food Consumption Trends in the U.S.

Although the demand for food fluctuates moderately from year to year, long term consumption patterns can be identified. Short run fluctuations are usually attributed to supply and price changes, whereas long run trends may result from demographic shifts, expenditure swings, lifestyle changes, and marketing innovations in addition to income and relative price changes. The most recognizable pattern in food consumption behavior in the last twenty years has been the shift away from animal products. American consumers are eating less red meat and eggs, and are consuming more crop products, which include such items as cereals, sweeteners, vegetable oils, fruits and vegetables (Table 1).

The current upward spiral for fruit and vegetable consumption can be traced back to the mid-1960s. Following peak consumption years in the early 1950s, fruit and vegetable consumption had been in decline prior to 1965. The reason as to why Americans consumed such large quantities of fresh produce in the early 1950s is unclear. Perhaps consumers were ready to take advantage of the variety and selection of fresh produce available to them after the austerity imposed by World War II. A plausible explanation for the subsequent decline might be that with the influx of processed and convenience foods, consumers were content to substitute away from fruit and vegetable products. Consumption figures for fruits and vegetables in the late 1980s are beginning to approach those of the early 1950s.

Table 1. Per Capita Consumption of Animal and Crop Products, United States, Annual Averages for Selected Time Periods, 1965-1987.

Food Item	Time Period					Percent change ^a
	1965-69	1970-74	1975-79	1980-84	1985-87	
-----pounds-----						
Red meats:	143.5	150.6	148.0	143.4	139.9	-2.5
Beef	78.5	83.9	87.8	77.3	76.9	-2.0
Veal	3.4	2.0	2.8	1.6	1.7	-50.0
Pork	58.2	62.1	55.9	63.0	59.9	2.9
Lamb & Mutton	3.4	2.6	1.5	1.4	1.4	-58.8
Poultry	44.1	49.0	53.7	63.4	73.2	66.0
Fishery Products	10.9	12.1	12.8	13.0	14.8	35.8
Eggs	40.0	37.9	34.6	33.5	31.8	-20.5
All Dairy Products ^b	585.5	554.3	542.5	558.7	593.8	1.4
Fats and Oils:	53.6	55.9	57.4	61.4	66.8	24.6
Vegetable	37.1	42.0	46.3	48.8	53.9	45.3
Animal	16.5	13.9	11.1	12.6	12.9	-21.8
Fruits:						
Fresh	77.8	75.7	80.5	85.9	92.7	19.3
Canned	N/A	13.0	11.6	9.7	8.5	-34.6
Frozen	N/A	3.4	3.1	3.0	3.7	8.8
Fruit Juices (citrus)	27.5	37.5	44.9	44.3	47.0	68.5
Vegetables:						
Fresh (selected)	63.7	65.4	68.7	74.4	79.1	24.2
Canned	N/A	92.6	90.7	87.6	87.4	-5.6
Freezing	N/A	13.6	14.4	15.0	16.6	22.1
Flour and Cereal Products	141.8	137.6	146.5	150.7	165.9	17.0
Sugar and Sweeteners ^c	120.1	129.2	131.2	135.7	149.5	24.5
Non-alcoholic Beverages:						
Coffee ^d	36.2	33.1	29.0	26.7	26.6	-26.5
Soft Drinks ^d	18.5	22.0	25.1	27.0	29.7	60.5

^a 1985-87 relative to 1965-69.

^b milk-equivalent, fat-content basis.

^c Dry weight.

^d Gallons

N/A: Consistent Data is not available.

Source: Calculated from USDA and Capps.

Animal Products

Fish and poultry consumption has increased significantly in recent years (Table 1) In 1987, per capita consumption for chicken broilers topped 60 pounds, almost a 30 pound gain over the previous two decades (Table 1). Likewise, turkey consumption practically doubled since 1966, reaching 15 pounds per capita in 1987. Five pounds have been added to the 1967 totals for fresh, frozen, canned and cured

fish, ending up at slightly more than 15 pounds per person in 1987. Red meat, on the other hand, has lost about 2.5 percentage points in the last twenty years. Currently, beef consumption is approximately 77 pounds per person, which is almost five pounds less than the 1965-69 period, and 17 pounds less than the record high of 94 pounds in 1976. Consumer response to pork has been somewhat more favorable. Although pork consumption figures have increased in the long run, they too have declined from a high of 68 pounds in 1980 to the current level of approximately 60 pounds per person. Probably the worst fate of all has been suffered by the egg industry (Table 1). After World War II Americans averaged a little more than one egg per day. Today's consumers average about four eggs per week, not including the number of eggs consumed in processed foods (USDA, January, 1989)

For dairy products, consumer response is mixed. Not since the Great Depression has whole milk consumption made up a smaller portion of the American diet than it does today. Mainly because of fewer calories and lower cholesterol levels, lowfat milk and yogurt are being substituted for whole milk products. Since 1967, per capita lowfat milk consumption has increased by more than 200 percent, while whole milk consumption has decreased by 50 percent (Figure 1A). Consumption rates for cheese have increased 130 percent from the 1965-69 period. Butter consumption has decreased slightly in the last twenty years, whereas ice cream and frozen dairy foods have remained relatively stable (Figure 1B).

Crop Products

Recovering from a dramatic downturn around the middle of this century, consumption of flour and cereal products is strong in the 1980s. Americans consumed 15 pounds of breakfast cereals per capita in 1987, which was a four and one-half pound increase from 1966 (USDA, January, 1989). Oatmeal, bran and other multi-grain cereals have recently become popular. Another cereal product that has made rapid consumption advances in recent years is pasta. Per capita pasta consumption in 1987 was about three times the 1967 level. Vegetable oil usage has also increased during the last two decades (Table 1). Salad bar popularity has spurred the use of vegetable oils in a variety of salad dressing preparations. Moreover, restaurants, fast food establishments, and other institutional outlets tend to cook more with oil than consumers do at home. The increasing number of convenience and snack foods being made available at the retail level also adds to vegetable oil consumption. On the other hand, consumption of animal fat has declined nearly 22 percent since 1967. Consumers, perhaps responding to high cholesterol and saturated fat health warnings, are reducing their intake of animal fats.

Beverage and Sweetener

The important job of quenching thirsty palates has fallen into the capable hands

Figure 1. Per Capita Food Consumption Trends, 1966-87.

Figure 1A. Per Capita Food Consumption of Lowfat and Whole Milk.

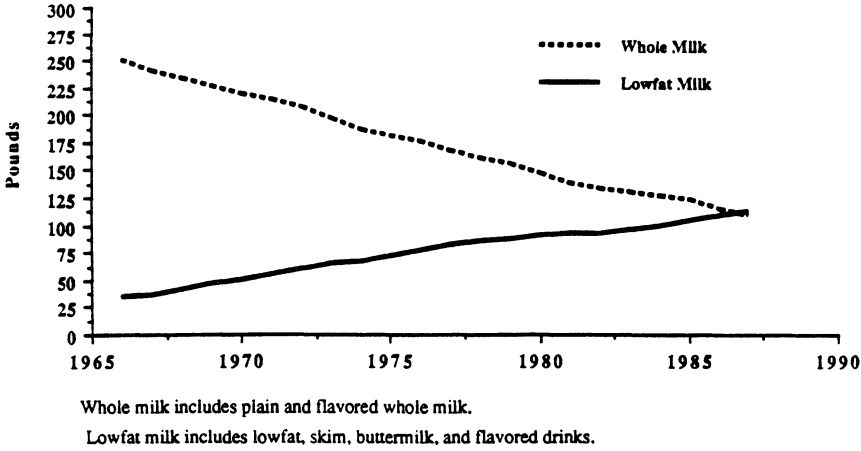
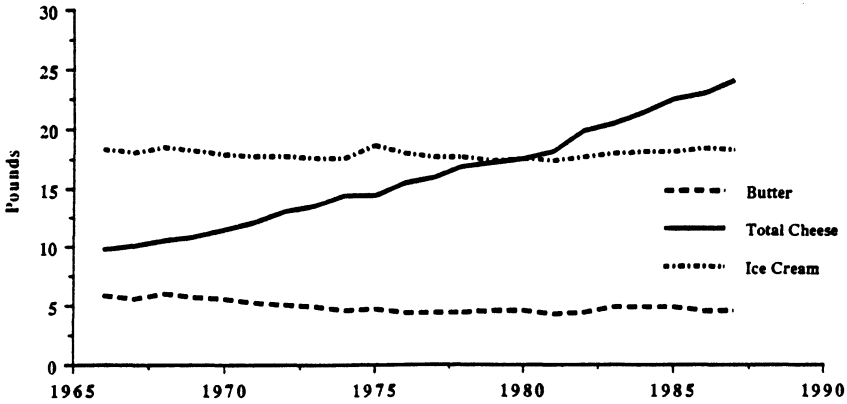


Figure 1B. Per Capita Consumption of Butter, Cheese and Ice Cream.



Source: Based on data from the USDA, 1988.

of soft drink manufacturers. In 1963, Americans consumed enough soft drinks to average 18 gallons per person. This figure, which has more than doubled today, makes soft drinks the number one nonalcoholic beverage choice in the United States. Coffee, ranked number one in the 1960s, has fallen behind soft drinks, alcoholic beverages, and milk (Bunch, 1987). Of total beverage consumption,

about one out of every five drinks contains some alcohol. Beer consumption per person has climbed 44 percent in the last twenty years, and wine consumption has more than doubled (USDA, January, 1989).

The development of single serving boxed fruit juices in the early 1960s and the addition of fruit juice blends to the marketplace has helped foster a 100 percent increase in non citrus fruit juice consumption (Farmline, 1984). Apple juice consumption, which was less than one pound per person in the 1950s has grown to nearly seven pounds per capita in the 1980s (Bunch, 1985). Well orchestrated marketing campaigns have helped to elevate the status of pink grapefruit juice, cranberry, grape, cherry and other exotic fruit blends. Sweetener use continues to climb in the U. S.; high fructose corn syrup, which is used primarily in processed foods and soft drinks is the number one sweetener. Refined sugar consumption has decreased since the middle 1970s. A per capita amount of 60 pounds was recorded in 1986, an all time low.

Fruits and Vegetables

In U.S. supermarkets, fresh fruits and vegetables have been one of the fastest growing items. Plentiful supplies, rising disposable income and changing lifestyles have played a role in increasing the amount of fresh produce included in today's consumer diet. However, not all fruit and vegetable categories have been as successful as that of fresh produce. Consumption of many canned fruits and vegetable items has declined in the last two decades (Table 1). Nonetheless, more than 130 different canned vegetable products and mixtures remain on supermarket shelves (Hecht, 1985). In recent years, dried fruit consumption has gained considerable momentum. Raisins lead the way with a 40 percent rise in consumption since 1967 (USDA, January, 1989).

Fresh vs. Processed. Whether used in salads, side dishes or eaten on the go as a snack, Americans are enamored with fresh produce. Technological advancements in production have resulted in ample supplies of higher quality produce and year round availability. Produce variety has increased almost to the point of saturation in some cases, and competition for the consumer fresh produce dollar has become increasingly fierce. Kiwi fruit, Granny Smith apples and bean sprouts, once considered foreign, are common items in contemporary produce aisles. Bananas followed by apples lead in fresh fruit popularity (Hecht, 1985). Fresh vegetables with the highest per capita consumption rates are lettuce, tomatoes and onions, the traditional salad bases. Other fresh vegetables, which have doubled and tripled their consumption rates since 1966 are cauliflower and broccoli respectively. One fresh vegetable not keeping pace with the crowd is the potato. At the turn of the century, potatoes held a prominent position at the American dinner table. Perhaps rising consumer influence best explains current potato consumption rates of approximately 45 pounds per person, a 14 pound drop since 1970 (USDA, January, 1989).

A growing concern in the fresh produce industry today is the presence of chemical residues on fresh fruits and vegetables which may impact consumption

trends. Consumer activist groups, calling for the minimization of pesticide usage, have put pressure on government agencies like the Food and Drug Administration and the Environmental Protection Agency to upgrade their testing and monitoring methods (The Packer, Jan. 21, 1989). As a result of the growing concern for food safety, private testing of fresh produce is on the rise. Many retailers are joining the residue-testing bandwagon by establishing their own certification programs (The Packer, Jan. 7, 1989). Consumer response to this issue in terms of altered consumption behaviors for fresh produce is varied. Results of a consumer survey in 1988 showed that more than 80 percent of the respondents were concerned about the possible presence of chemical residues on fresh produce. However, about 65 percent of the consumers surveyed said they were concerned, but had not changed their buying habits for fresh fruits and vegetables (The Packer, Jan. 14, 1989).

In terms of processed fruits and vegetables, frozen has been among the most popular. Freezing as a food preservation technique was developed in the 1930s, but not until after World War II did frozen vegetable consumption become popular. Consumption levels in 1987 were about 17 pounds per person, a 4 pound increase per person from 1970 (USDA, January, 1989). Frozen vegetables registering the biggest consumption increases in recent years are sweet corn, cauliflower, and broccoli. Currently, more than thirty different frozen vegetable combinations are available. The introduction of frozen fruit juices in the 1940s has also been profitable. Americans who were drinking about two gallons of frozen orange juice twenty years ago have more than doubled their intake in the 1980s.

Consumer's perception of fresh and frozen fruits and vegetables as being more nutritious and of better quality than canned items has left canned food processors fighting for survival (Table 1). In an effort by the industry to elevate their failing nutritional image, the Canned Food Information Council (CFIC) was established in 1984. Research comparing the nutritional content of fresh, frozen and canned products prepared in the home is producing favorable results for the canned good manufacturers (West, 1987). Nearly one half of all canned vegetable purchases in the U.S. are tomato products. This includes a wide array of items such as tomato sauce, paste, juice, whole tomatoes and ketchup.

Forces Shaping Domestic Food Demand

The domestic demand for food is shaped by a myriad of forces. Essentially a timeless concept, food demand is the quantity of food that consumers are willing and able to purchase for specified time periods in the marketplace. Willingness refers to the desire consumers have for a product, while ability refers to resource availability for food purchase. A combination of demographic and economic factors, acting interdependently or independently can alter consumer demand. These factors include changes in consumer tastes and preferences, fluctuations in incomes and relative prices, and the development of new marketing techniques and technology.

There has been a debate in the existing literature as to whether economic factors, such as changes in relative prices and incomes, or the demographic shifts and changes in tastes and preferences have been more important in shaping consumer food demand. For example, researchers have found that changes in relative prices rather than a permanent change in consumer meat preferences fully explain long term changes in the consumption mix between various kinds of meat, beef, pork, and poultry (Dahlgran, 1987). On the other hand, for other products such as nonalcoholic beverages and eggs, lifestyles and non-economic factors have played a more important role. Therefore, a major challenge in researching consumer food demand is to determine whether observed changes in consumption patterns are caused by changes in supply conditions and relative prices or by changes in consumer preferences and demographics (Bullock & Womack, 1986).

Population Shifts and Other Changing Demographics

Two persuasive changes that potentially affect future consumer food demand are declining population growth rates and the aging of the population (Blaylock and

Table 2. Demographic Trends Influencing Consumer Food Purchases, Annual Averages for Selected Time Periods, 1960-1986.

	1960	1970	1975	1980	1986
Population growth (percent change from previous years)	1.6%	1.2%	1.0%	1.2%	1.0%
Median Age (years)	29.4	27.9	28.7	30.0	31.8
Average household size (No. of persons)	3.30	3.14	2.94	2.76	2.66

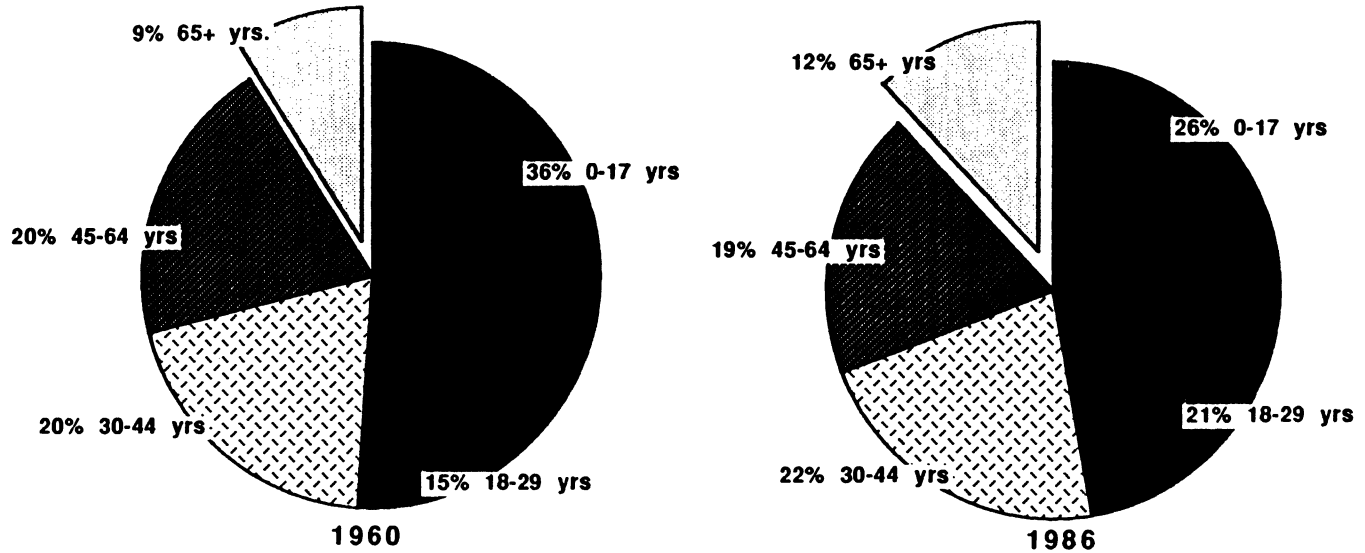
Source: U.S. Department of Commerce.

Smallwood). Population growth in the US has been slowing down (Table 2). From 1950 to 1980, the U.S. population increased by 50 percent. On a percentage basis, the population growth for the next thirty years is expected to be less than half of this rate (Blaylock & Smallwood, 1986). Furthermore, estimators predict that from 2010 to 2050 the U.S. population will expand at an even slower pace. Coupled with the declining population growth rate, has been a shift in the age distribution of persons nationwide (Figure 2). Receiving the most recent publicity has been the increase of persons 65 years of age and older; their numbers have almost doubled since 1960. The median age, which in 1986 was 31.8 years, has been inching upwards since the 1940s. By the year 2010, it has been predicted that persons 76 and over will makeup 16 percent of the total U.S. population, and that by 2030 the median age will be 40.8 years (Blaylock & Smallwood, 1986).

Age Distribution. Over time population age distribution swings are partially responsible for changes in food consumption patterns. One illustration is the large number of teenagers in the late 1950s and early 1960s, that resulted from the post World War II baby boom. Because teenagers tend to eat more than the average population, food consumption rates rose considerably during this time. Particularly noticeable was an increase in the consumption of snack foods and soft drinks which have become characteristic of teenagers (Epp & Malone, 1981). On a similar tangent, the decline of young children in the 1970s and 1980s has contributed to a decline in whole milk consumption. Future decreases in the teenage population and increases in the older population will likely lead to a continuation of this trend. The expansion of middle aged and elderly populations are being charged in part for the large increases in fruit and vegetable consumption, as well as substantial declines in meat consumption. According to researchers, purchases of fruits and vegetables by older consumers are generally greater than those of younger people.

Specialists disagree with respect to the future eating habits of the elderly. Some say that future projections should be based on the current status of the elderly. Since elderly people presently eat out less often than other age groups, it is estimated that elderly persons in the future will likewise spend less money eating out (Blaylock & Smallwood, 1986). The opposition says that the eating habits of the 21st century elderly will be similar to those of middle-aged persons in the 1980s. Accustomed to fast food, salad bars, and carry outs, tomorrow's elderly will spend more of their income on food prepared away from the home (University of California Ag. Issues Center, 1986-87).

Household Composition. Another demographic variable which affects the consumer demand for food is household composition. The traditional family unit consisting of a working father, a nonworking mother and two children represents only 13 percent of all modern day households. The average household size in 1987 was 2.66 persons, down from 3.3 persons in 1960 (Table 2). Individuals living alone, totalling over 21 million persons in 1987, made up almost one quarter of all households (U.S. Department of Commerce, 1987). Unable to realize economies of scale, smaller households spend more on snack foods, and foods prepared outside the home than do larger households. In 1981, data revealed that single households

Figure 2. Age Distribution of U.S. Population in Percentages

Source: Based on data from U. S. Department of Commerce

spent 36.8 percent more per capita on total food expenditures than the average household (Family Economics Review, 1985). Based on the increasing number of single households, processed fruit and vegetable consumption is predicted to increase. Fruit and vegetable expenditures for single households averaged 32 percent higher than all households in 1981 (Family Economics Review, 1985).

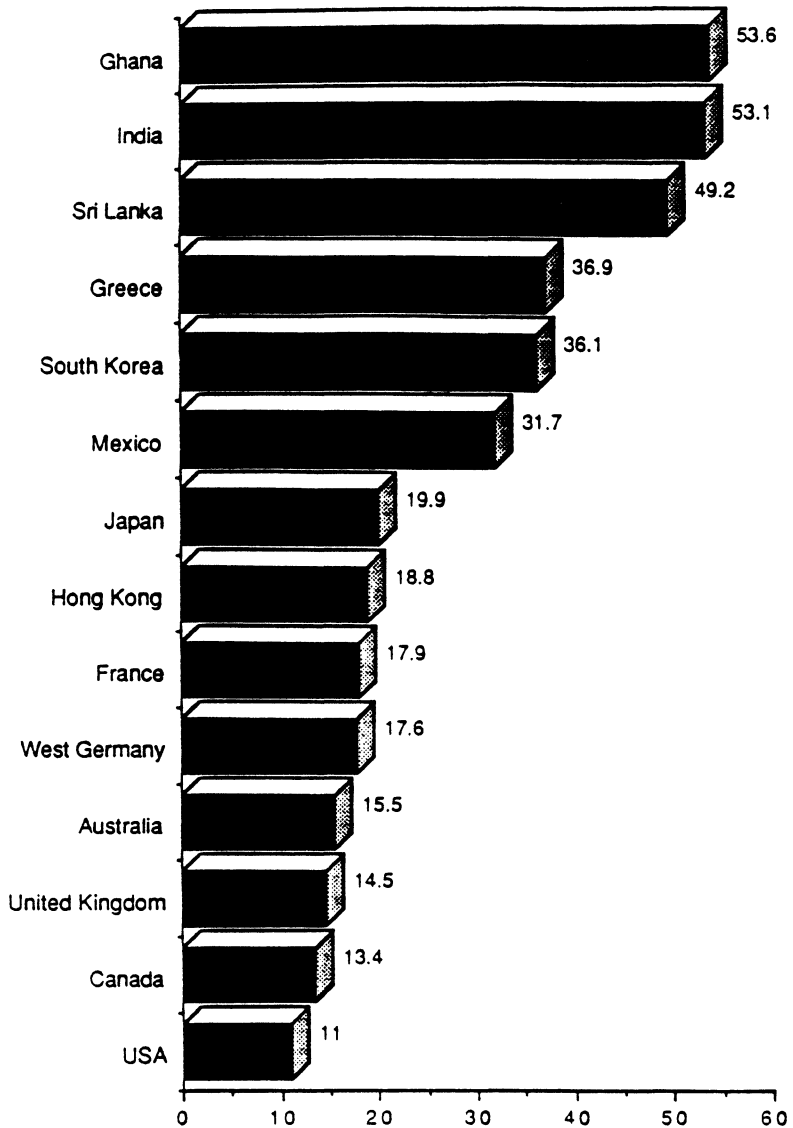
Female Labor Force Participation. The number of females in the labor force has been increasing since WW II. From 1960 to 1987, the number of married women employed in the labor market doubled (U.S. Department of Commerce, 1987). The increasing number of women in the work force has more than one implication for food demand. Many households with two wage earners are able to spend more money on high quality food products and are able to afford a greater variety of items. Dual earner households often lack adequate household production time for meal preparation, consequently they spend more on convenience foods and on meals away from home. Working wives buy additional household and leisure time by choosing to eat out. Depending upon their employment status, single women may or may not be able to afford high quality food items such as fresh fruits and vegetables, but like their married counterpart, they have also increased their use of convenience and prepared foods.

Ethnicity. A growing ethnic population has spurred the demand for various cultural foods across the U.S. Research predicts the ethnic population to be 16.9 percent of the total population by the year 2000 (University of California, Ag. Issues Center, 1986-87). The recent popularity of Southeast Asian, Thai and Southwestern cuisine has aroused an interest in such fresh vegetables as bok choy, napa cabbage, chili peppers and chinese pea pods. The canned food industry, in an effort to diversify product lines and boost sales, has attempted to capitalize on ethnic popularity by offering “heat and serve” oriental and mexican cuisine. Fresh and processed tomatoes gained much of their popularity in the 1960s and 1970s due in part to their use in ethnic foods. In the early 1970s, the average produce department marketed about 65 different produce items. Today, this figure is closer to 175 items, and some supermarkets offer as many as 250 different kinds of produce. In the past, consumers selected grocery stores depending on the reputation of the meat department. Becoming more prevalent today is grocery store selection based on the quality of the fresh produce department (McLaughlin & Hamm, 1985).

Economic Factors and Food Expenditures

Economic factors such as incomes and relative prices can have a significant effect on food expenditures. However, the impact of these factors is not expected to be large for many food items, as Americans spend a smaller portion of their income on food compared to consumers in less developed countries (Figure 3). According to Engel’s Law, the percent of disposable income spent on food declines with increases in real income. Moreover, purchases of luxury and semi-luxury goods increase with expanded incomes. In 1984, households earning less than \$5,000 per year spent about 53 percent of their annual income on food. By contrast,

Figure 3. Share of Consumer Expenditure for Food by Country, 1984.



Source: National Food Review, 1986

those in households where the after tax income was greater than \$50,000, spent only about 10 percent of their after tax income on food (Smallwood, Blaylock & Harris, 1987). In the United States, service expenditures, which include such items as transportation, housing, household maintenance, and medical costs, represent the largest portion of personal disposable income (University of California Ag Issues Center, 1986-87).

During the last two decades, real disposable personal income rose by 60 percent (Table 3). The impact of income growth on food expenditures depends on the income elasticity of demand which measures the responsiveness of quantity demanded to changes in income. A 1986 study reported that a one percent change in total expenditure corresponded to an increase in food purchases of less than one half of one percent (Blanciforti, Green & King, 1986). Although income elasticity for food products is small, variations exist among food items. Food groups most responsive to increases in income are foods eaten away from the home, beef, fish, cheese, butter and alcoholic beverages. Some processed fruits and vegetables exhibit substantial responses to income changes. For example, the income elasticity for fruit juice is greater than one (Huang, 1985).

Relative prices may also play a role in explaining changes in consumption patterns. As a food item becomes less expensive, its consumption is expected to rise (the law of demand). Nevertheless, for many food items the effect of economic factors on food consumption levels may be offset by the impact of noneconomic factors such as demographics and changes in consumer tastes and preferences. From the mid-1960s, real consumer prices for animal products and processed fruits and vegetables fell, with the greatest decline for eggs while real price increases were apparent for fish, nonalcoholic beverages, sugar and sweeteners, and food away from home (Table 3). At the same time, real price changes for fresh fruits and vegetables and cereal products were not significant. For many of these foods, the observed changes in consumption patterns relative to price fluctuations have been inconsistent with the law of demand. Therefore, the effect of demographic factors and consumer preferences should not be underestimated when analyzing the impact of economic factors on food demand.

Lifestyles and Demand for Food

The impact of lifestyles, tastes and preferences on consumer demand for food has been significant in recent times. Higher incomes have contributed to a more cosmopolitan and affluent society. Innovative methods of food presentation, the availability of a wide variety of foods, plus the addition of value added products, such as pre-cut fresh fruits, and ready to eat salads, have become the norm rather than the exception in today's supermarket. Compared to earlier prototypes, contemporary consumers are a study in contrasts. Today's consumers may be better educated, but appear to be lacking in traditional culinary skills. Accessibility to commercial food establishments, and the development of convenience foods, which transfers food processing techniques away from the household manager, has lessened the necessity for home food preparation expertise.

Table 3. Indices of Real Prices of Selected Food Items and Real Personal Disposable Income, Annual Averages for Selected Time Periods, 1966-1987

Food Item	Time Period					Percent change
	1966-69	1970-74	1975-79	1980-84	1985-87	
—————(1982-84=100)—————						
Indices of Real Prices(a):						
All Food	102.1	106.4	109.6	101.8	99.13	-2.9
Food at Home	105.3	106.6	112.3	102.3	97.7	-7.2
Food Away From						
Home	93.6	98.4	103.1	100.2	102.1	9.1
Meat, Poultry, &						
Fish:						
Fish	112.4	118.0	118.1	103.5	95.8	-14.8
Meat	112.9	118.9	117.8	103.6	93.8	-16.9
Poultry	149.8	143.2	132.4	104.1	100.7	-32.8
Fish	78.2	90.6	87.7	102.1	107.1	37.0
Eggs	172.6	141.0	141.0	102.5	84.6	-51.0
Dairy Products	118.1	115.8	115.6	103.5	94.4	-20.1
Fats and Oils	106.6	109.8	120.1	103.3	97.9	-8.2
Fruits and Vegetables:						
Fresh	101.1	102.7	105.6	101.1	101.8	.7
Processed	102.3	101.7	108.7	100.3	97.1	-5.1
Flour and Cereal						
Products	99.5	99.3	106.8	100.6	100.9	1.4
Sugar and						
Sweeteners	79.0	82.9	105.9	103.4	98.5	24.7
Non-alcoholic						
Beverages	68.5	69.2	104.2	102.9	97.4	42.2
Real Personal Disposable						
Incomes(a)	69.8	81.7	92.7	98.0	111.7	60.0

s(a) Nominal terms were converted into real terms by dividing the nominal index by consumer price index of all items.

Source: Calculated from USDA.

Concern for fat, cholesterol and calorie content. Publication of the “Surgeon General’s Report on Nutrition and Health” in 1988 emphasized the positive role of diet in long term preventative health care. This proclamation and additional media exposure has catapulted nutrition into the forefront of public attention. As a result, consumer demand for foods that are low in calories and cholesterol has been overwhelming. Findings from a 1985 Survey, by the National Restaurant Association said that 47 percent of adults consider themselves to be health conscious (FDA Consumer, 1987). Even though a substantial number of Americans are aware of health and nutrition issues, response in terms of dietary selection varies. Many uncommitted consumers continue to vacillate between consuming well balanced meals and “sinful” indulgence.

To some extent, the concern for health has adversely affected the consumption rates of several agriculture commodities in the last couple of decades. Worries over elevated cholesterol levels may be partially to blame for declines in egg, dairy, and beef consumption. Commodities benefiting from medical reports promoting diets that are high in fiber and low in fat are fresh and frozen fruits and vegetables, vegetable oils, and whole grain cereal products.

Consumers seek convenience. Racing around at an ever-quicken pace, today’s consumers are particularly concerned with speed in food preparation. Precooked, preprocessed foods, as well as multi-ingredient, prepackaged mixes offer the consumer savings in terms of preparation time, and culinary expertise. Convenience foods are inclusive of canned and frozen fruits, vegetables and fruit juices, prepared salad dressings, soup starters, condiments, and packaged bakery mixes. Next to “carry out meals,” which are ready to eat, frozen plate dinners represent the ultimate convenience food. In an attempt to lure the discerning consumer, many of the newer frozen entrees are offering one or more of the following features; gourmet menus, “lighter” fares, fancy names, attractive packaging, and premium prices (Odland, Vittel & Davis, 1986). The microwave oven has revolutionized modern day cooking techniques. The epitome of “superconvenience” today is being able to purchase a preprocessed meal that can be heated in the microwave, then served out of the same container in which it was purchased (Fensholt, 1987).

Research results show that the quantities demanded of convenience and nonconvenience foods are more responsive to changes in income and own-prices than to changes in cross-prices (Capps, et al). With respect to demographic variables, results show that black or nonwhite households, and households with the household manager at least thirty-five years of age, allocate smaller shares of the food dollar to all convenience food classes. In terms of regional differences, households located in the Northeast, North Central and West of the U.S., allocate larger shares of the food dollar to complex convenience foods than households located in the South. Also, Northeastern and North Central households allocate significantly smaller shares to nonconvenience foods than Southern households (Capps, et al).

Americans eat out. A growing trend among Americans is the number of

meals they consume away-from-home. In 1986, the National Restaurant Association, estimated that over 45 billion meals were eaten in restaurants, schools and work cafeterias, meaning that every person ate out, on the average, 192 times per year (FDA Consumer, 1987). The away from home food market is composed of commercial food service establishments and noncommercial institutional outlets. During the past twenty years, growth in the commercial sector has been dominated by fast food chains. Although the pace has slowed somewhat in the 1980s, fast food eating places maintain a healthy share of the away from home food dollar. Institutional eating places, including hospitals, colleges, universities, retirement homes, military posts and food service outlets, operate fewer facilities, but feed more people than commercial establishments. As the elderly population continues to grow into the 21st century, nursing care facilities and retirement homes are likely to expand. Development of the institutional sector of the food service industry will involve special consideration regarding this demographic phenomenon.

The fact that prices for food away-from-home have increased at a faster pace than foods purchased for in home consumption use is primarily attributable to the rising costs of food service (Table 3). In 1987, for every dollar the consumer spent on food consumed at home, the marketing bill was 74 cents. For food consumed away from home, the marketing bill was 84 cents (USDA, April, 1988). Despite the costs, each year consumers regularly spend a larger share of their food dollar on snacks and meals prepared outside the home. Consumers who are inclined to eat out most frequently are between the ages of 25 and 44 (Putnam & Van Dress, 1984).

The desire to maintain a healthy diet accompanies Americans as they eat out. In an effort to satisfy the nutritious and calorie conscious consumer, three out of four restaurants are altering their menus. In a 1986 National Restaurant Association Survey, 40 percent of the 504 restaurant managers interviewed, noticed more customer requests for fresh vegetables, poultry and fresh fruit, and one out of three mentioned consumer suggestions for leaner meats. Ironically, one fourth of the respondents reported an increase in the demand for desserts. To accommodate the discriminating consumer, many restaurants are serving salad dressings and sauces on the side, broiling instead of frying, and are actively promoting low calorie meals (FDA Consumer, 1987). Moreover, much of the increased consumption of poultry and frozen potatoes is also attributed to away from home eating. Commercial and institutional outlets are not the only purveyors capitalizing on the consumer away-from-home dollar. Convenience stores have introduced fast foods, and limited menu service, while grocery stores are being remodeled to include deli counters, salad bars, and ready to serve entrees. Data on food consumed away-from-home does not reflect the prepared meals purchased from grocery stores.

Factors most often cited in the literature in conjunction with expenditure increases for food consumed away from home are growth in per capita income, increases in the number of females in the labor force, and decreases in household size. Researchers found that the age of the household head and household size were positive predictors of the percentage of household meals prepared and eaten at home, while education of the head, income of the head(s), and number of hours

worked by the household head(s) were negative predictors (Volker & Winter, 1988). Moreover, research has shown that persons' residing in single-headed households and households where the female household head was employed consumed more meals away from home. However, neither regional location nor degree of urbanization had significant impact on the numbers of meals consumed away from home (Morgan & Goungetas, 1986). Additionally, the presence of preschool-age children had a negative impact on restaurant expenditures and a positive impact on fast food expenditures (Haines, 1983).

Marketing Innovations and Implications for the Food Industry

The marketing and promotional schemes of food marketers and agricultural commodity groups are crucial in increasing the demand for food products. These activities include, but are not limited to promotion, advertising, new product development, and packaging innovations. Responding to the various concerns of a fragmented consumer society, marketers adopt their strategies in accordance with specified consumer wants and needs. In addition, marketers have the unique ability to create product image and influence consumer purchases.

Variety, in terms of selection and product mixture, is a satisfaction criterion of many contemporary consumers. Often times, consumer demands for food are difficult to categorize. Consumers tend to purchase products and services that cover a broad spectrum of price and value combinations. Consumers may purchase expensive imported fruits and lower priced generic vegetables at the same time. In 1985, the fresh fruit and vegetable industry spent approximately 70 million dollars, a 40 percent increase from 1985, in an attempt to sway public opinion in their favor. The Florida Citrus Grower's Association was the biggest spender, followed by the Washington State Apple Growers (Hecht, 1985).

"Heard it through the Grapevine," a promotional gimmick sponsored by the California Raisin Advisory Board, has promoted the lowly raisin to national stardom. According to an industry spokesman, the primary goal of the raisin commercial was to arouse consumer interest. For the first eighteen months following its release, raisin sales remained flat, but more recently, sales have been increasing at a rate of 5 to 6 percent per month (Nef). Similar marketing campaigns have boosted sales of other food products. Twenty-five years ago, yogurt was a low profile food item. In 1966, the average person consumed less than one-half of a pound of yogurt per year. Promoted as a healthy, low calorie dairy product in the 1980s, yogurt consumption has increased more than tenfold (USDA, January, 1989). Today, the beef and pork industries also allocate funds to national advertising campaigns.

New product development and technological advancements in marketing encourages consumer purchase of many food items. Relatively recent innovations appearing on supermarket shelves are single serving aseptically packaged fruit

juices, fruit roll ups, and fruit juice blends. All three of these products experienced double digit sales increases in 1986 (Letwak, 1987). Increases in turkey consumption have been supported by the variety of processed turkey products available on a year round basis. Creative marketing technology has contributed to the popularity of turkey pastrami, turkey ham, and deli turkey breast in the past fifteen years.

Marketing infrastructure, which includes transportation facilities and the structure of retail and wholesale markets, is also adapting to the consumer demand for high quality produce. Equipment that transports produce from the field to the supermarket, field wrapping machines, improved cooling techniques, and temperature controlled distribution centers have been developed to insure the delivery of quality produce to retail outlets. Supermarkets in turn are remodeling store formats, emphasizing produce departments. A growth area worthy of mention are deli departments, which are offering a variety of prepared fruit and vegetable combinations in addition to meat. Servicing the educated, nutritionally concerned, yet surprisingly fickle consumer, is a complex role which food marketers strive to master.

The food industry must pay attention to the needs of the elderly as they are a rising proportion of total U.S. population. Implications from the trend towards smaller households as well as more female labor force participation will also impact food industry growth. Smaller households and dual career households spend more on foods prepared outside the home. Marketers have responded to contemporary consumers by promoting products that are compatible with their changing lifestyles. Food marketers, in an effort to stimulate industry development, have diversified product lines by offering more processed and convenience foods for consumer selection. The introduction of processed food items that are conveniently packaged and ready to serve has likewise yielded positive results for the food industry. In the future, another source of concern for marketing professionals, is consumer sensitivity to agricultural chemicals. The broad category of agricultural chemicals, from growth hormones in livestock to pest and weed control in grain, is a source of uncertainty facing the agricultural sector. Recent consumer reaction to Alar contamination of apples and apple products illustrates the extent to which demand is responsive to the presence of chemical residues.

Consumer Preference for Direct Market Outlets

In recent years, consumers have renewed their interest in non-traditional retail outlets. Farmers markets, roadside stands, and pick-your-owns are gaining in popularity despite the fact that more than 95 percent of the market for fresh produce is channeled through conventional supermarkets and institutional outlets (Weimar, Hayenga, Hallam & Calkins, 1987). Consumers, responding to national health campaigns emphasizing the importance of fresh fruits and vegetables, are capital-

izing on the opportunity to select and purchase fresh quality produce at potentially lower prices by supporting these alternative markets. Technological advancements in production, handling, and preservation has helped producers meet year round demands for fresh produce. Early harvesting of crops necessitated by cross country delivery deadlines and specialized marketing services, add to the retail produce prices. Farmers, who market their produce directly to consumers, bypass many of these costs and are able to be more price competitive. However, small local growers are unable to compete with larger commercial suppliers on a year round basis due to a lack of standardized packaging and consistent supplies of quality produce.

Producers of fresh produce utilize three basic marketing channels, which include commercial processing, wholesaling, and direct-to-consumer markets. Due to a limited number of food processors in many states, commercial processing is probably the least viable outlet in the short run. Retail and institutional outlets, which distribute fresh produce to the consumer, represent the final link in the wholesale chain. Direct-to-consumer markets have the least amount of recorded data, and published information on fresh produce pricing and quantities sold through direct markets, is difficult to attain. In general, these markets are viewed by farmers as a way to supplement their income and by consumers as an outlet for buying fresher, higher quality produce. Shopping at direct markets is a social activity for some patrons, whereas others believe their involvement helps out the local farmer. Direct-to-consumer market options include pick-your-owns, roadside stands, and farmers markets. Additional opportunities include truck stops, buying clubs, and consumer coops. The pick-your-own method saves the farmer harvest, storage, handling and transportation costs. In this situation, consumers benefit from lower priced produce and gain accessibility to fresh, mature produce. Roadside stands are usually positioned close to the producer's operation, usually on well traveled roads; whereas, farmers markets are more visible and are located inside centralized urban areas. Produce sold in roadside stands and farmers' markets must be harvested and temporarily stored.

More than 13,000 direct markets were accounted for nationwide in 1978 (Lindstrom, 1978) and in Oklahoma, there are currently more than 30 farmers' markets throughout the state. As one might expect, the greatest number of direct marketing outlets are found in geographic areas of the United States where fruits and vegetables are grown commercially. These include California, Florida, the Northeast, and the Great Lakes region. The majority of sales receipts in these outlets are from fresh fruits and vegetables, but other items for sale may include meats, baked goods, tree nuts, honey, handicrafts, spices and herbs. In the mid-1970s, the rapid rise of food prices prompted the federal government to legislate the Farmer to Consumer Direct Marketing Act. Three million dollars in federal grants were appropriated to initiate, encourage, develop, and coordinate methods of direct marketing within individual states. The act provided financial aid, educational programs, and technical assistance to participating states (Lindstrom, 1978).

Comparisons of Direct Market Outlets

Several studies have been conducted to analyze consumer behavior and preference in direct outlets. In one study, Tennessee consumers evaluated farmers' market produce. Freshness, followed by price, quality, selection and convenience were the prioritized responses given for patronizing these outlets. In this study, consumers indicated overall satisfaction with locally grown produce, but unanimously voted supermarkets as the predominant outlet for fresh produce (Eastwood, Orr & Brooker, 1986). In the majority of these studies, freshness was listed by consumers as the number one reason for shopping at direct market outlets with few exceptions (Table 4). In the cases where quality came in second, price was given as the primary reason for choosing farmers' markets and roadside stands. Generally, produce selection, variety, and availability of quantities were cited as being less important factors. In most states, helping farmers and a preference for locally grown produce did not strongly influence customer support of alternative markets. Quality has more than one connotation, depending on individual perspective.

Table 4. Factors Affecting Consumers' Decision to Purchase Produce at Farmers' Markets

	freshness/ better taste	selection/ variety	quality	price	convenience	support local farmers	pleasurable experience	bulk quantities available
North Carolina ^c	1*	5		2	6		3	4
Tennessee ^b	1	4	3	2	5	6		
Massachusetts ^d	1	6		3	5	4	2	
Alabama ^a	2	5	3	1	6			4
Vermont ^e		2	1	6	5	4	3	

^aAdrian, J. L. 1982.

^bEastwood, David B., R. H. Orr, and J. R. Brooker. 1986

^cEstes, E. A. 1985.

^dLockeretz, William. 1986

^ePelsue, N. H. 1984

*Numbers in the table correspond to rankings. That is "1" is the most important factor and "6" is the least important factor among those mentioned.

Features that are commonly associated with quality include appearance, size, smell, shape, feel, taste, and freshness. Some of these characteristics are visually apparent, while others can only be imagined in the abstract.

In eastern Massachusetts, consumers who purchased produce at farmers' markets were compared to those who bought their fresh fruits and vegetables at traditional supermarkets. Consumers denoted freshness and quality of produce as the overwhelming reason for shopping at farmers' markets. Their primary motive for shopping at supermarkets was convenience. At supermarkets, consumers can buy fresh produce plus a multitude of other grocery items; whereas, product assortment at farmers markets and roadside stands is usually limited. Moreover, the operational hours and location accessibility of supermarkets surpasses direct markets. In this study, price played a moderate role in determining whether or not consumers shopped at farmers' markets. Shoppers patronizing both types of outlets indicated that they liked the idea of supporting local farmers, but buying locally grown produce was not a determining factor in their site selection process (Lockertz, 1986).

Similar studies conducted in Alabama, North Carolina, and Vermont produced comparable results. A survey at Auburn University interviewed 118 consumers to examine personal characteristics and fresh produce buying behaviors. Price was listed as a key factor influencing consumer purchases at farmers' markets in this study, followed by freshness, appearance, quantity availability, variety, convenience, and taste (Adrian, 1982). In North Carolina, where 65 farmers' market customers were asked to rank their motivational preference for shopping at farmers' markets, superior product quality in terms of freshness and/or taste, was ranked number one, followed by price. Consumers were less concerned with large quantities of produce for home processing, the social aspects of shopping at farmers markets and the desire to support local farmers. Reasons cited for not shopping at farmer's markets were inconvenience in terms of location and lack of variety in product selection (Estes, 1985). In Vermont, respondents to a survey questionnaire named quality as a primary reason for shopping at farmers' markets and roadside stands. Consumer preference for locally grown produce, product accessibility, and the opportunity to personally select produce were also ranked as important considerations (Pelsue, 1984). In this survey, shoppers were not overly concerned with price, supporting the idea that consumers are looking for and are willing to pay for higher quality produce.

Additional descriptive information about consumers was collected from several of these surveys; included were the average distance traveled for the purchase of fresh fruits and vegetables, the predominant sex and average age of the buyers, the amount spent per visit, and shopping frequency. For example, in Vermont, customers were willing to travel from one to ten miles to farmers markets or roadside stands. Once they arrived, 50-60 percent of these customers bought one half or more of their supply of fresh fruits and vegetables at the market, and about two-thirds of the shoppers were women shopping alone (Pelsue, 1984). In Alabama, 89 percent of the shoppers were reported to be female, and 37 percent of the consumers were

in the 40 to 50 year old age bracket (Adrian, 1982). Seventy-two percent of the consumers in North Carolina reported they shopped farmers' markets at least once or twice a week, and 46 percent said they spent an average of three to six dollars per visit on produce purchases (Estes, 1985).

Marketing Implications

Future growth in direct markets will depend upon successful adoption and implementation of marketing strategies. Not knowing the location and poor location were listed among the disadvantages of direct markets. One study implied that many consumers are simply unaware of alternative markets for fresh produce. Increasing the number of outlets and the hours of operation, as well as careful location planning, could alleviate many of these perceived shortcomings. Farmers' markets were also criticized for their lack of product variety. By expanding product lines, farmers' markets and roadside stands could increase both their popularity and sales.

The idea that successful sales of local produce is dependent upon producer responsiveness to consumer needs must be emphasized. The development of advertising and promotional campaigns that are geared towards the consumer would be one way of accomplishing this goal. Some respondents indicated an interest in produce knowledge, especially in regards to serving ideas. With this in mind, information on preparation techniques along with the promotion of quality produce at attractive prices could be incorporated into advertising programs. Moreover, additional customers would be attracted should food stamps become an allowable exchange. Common means of advertising used by direct marketers include road signs, newspapers, and word of mouth. In Oklahoma, the Market Development Division of the Department of Agriculture has published a brochure which lists the names and addresses of all the organized farmers' markets throughout the state.

International Trade of Fresh and Processed Fruits and Vegetables

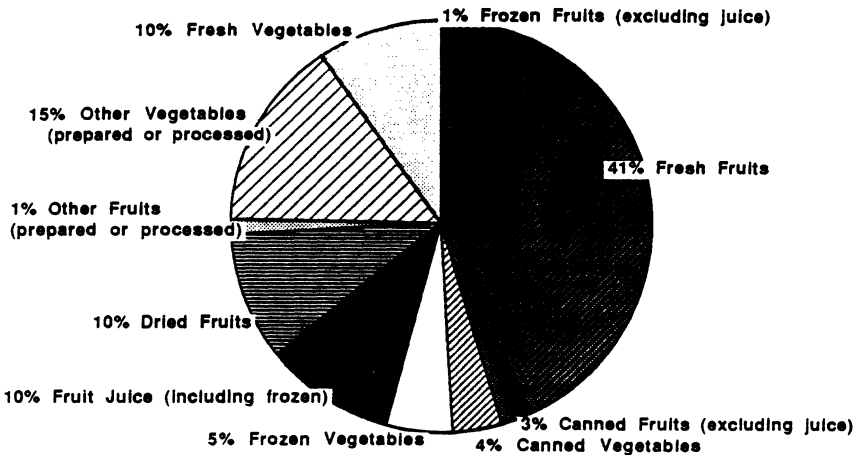
International marketing of fruits and vegetables, both fresh and processed, is an important component of agricultural trade. Expansion of U.S. agricultural exports benefits not only the national farm economy, but producer incomes as well. The U.S. reigns as one of the world's largest net exporters of agricultural commodities, but significant inroads by foreign competitors in recent years has slowed its continued growth. For the 1988 fiscal year, fruit and vegetable imports into the U.S. surpassed their exports by nearly three quarters of a billion dollars (Figure 4 and 5). Large supplies of frozen concentrated fruit juice, frozen vegetables, processed

mushrooms, and tomato products, as well as specialty produce, comprise a large portion of these imported items (Buckley, Hamm, Shannon, Huang & Zepp, 1988).

A multitude of barriers exist in the world market place which complicate the flow of agricultural trade. Some of these barriers are fluctuations in world exchange rates, import quotas, tariffs and duties, transportation obstacles, cultural differences and a variety of governmental regulations and policies. Future international opportunities for U.S. producers and processors will depend upon capacity production of high quality food items, competitive pricing strategies, effective marketing campaigns, and attention to cultural details.

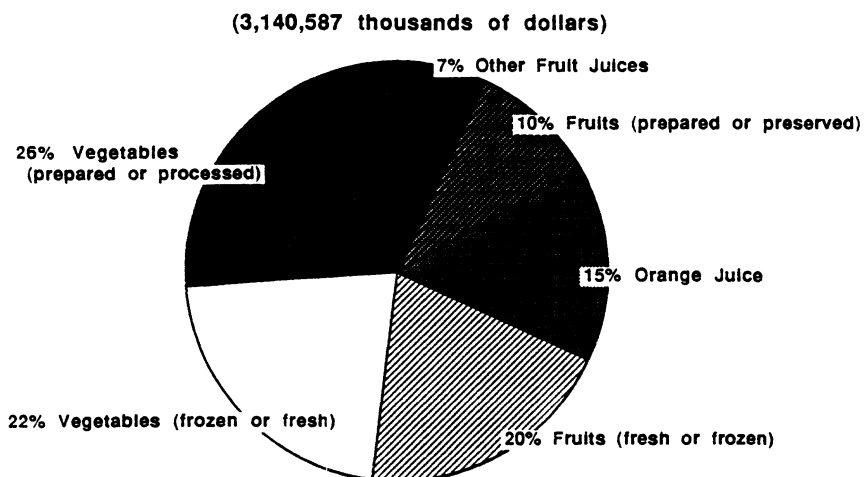
In the early 1980s, the strong U.S. dollar had a negative impact on many fresh and processed food exports. In terms of price, many fruit and vegetable products became relatively expensive in foreign market currencies. Encouraged by governmental subsidies, other well developed countries increased their production during this time period and gained much of the market share that previously belonged to the U.S. Concurrently, developing countries who had been purchasing large quantities of excess capacity from the U.S., increased their domestic production as well. As a result, by the time the U.S. dollar weakened in 1985, the structure of agricultural exports had shifted. International monetary adjustment periods can take as long as three years to reconcile; therefore, U.S. recovery of sales has been slow.

Figure 4. U.S. Exports of Fruits and Vegetables for October 1987 - August 1988



Source: USDA/FATUS. September/October 1988.

Figure 5. U.S. Imports of Fruits and Vegetables for October 1987 - August 1988



Source: USDA/FATUS. September/October 1988.

Potential International Markets

The outcome of the 1992 European unification will have worldwide implications for agricultural trade. For manufacturers and shippers, this coalition spells product standardization and documentation reduction respectively. Production of everything from coal to wine will be controlled by the governing body of this 12 member community and free movement of goods, services, and jobs across borders will be allowed. Europe is already emerging as a forceful trade opponent to the United States and Japan, limiting importation of many food items. Although strict duties and import quotas apply to many products, tariffs for some fruits and vegetables vary depending upon European growing seasons. Because European demand for quality produce remains high and refrigeration for the most part is adequate, market niches continue to prevail. Several products like garlic, nuts and raisins, which are grown in the U.S. and whose world wide production is small, enter these countries duty free. Also, specialty items like popcorn and many dried fruit combinations create gaps within the protective systems, thereby, opening up export opportunities. Representing approximately 400 million consumers, the new Europe should remain a viable target for contemporary and creative food products.

Other well developed countries such as Japan, Hong Kong, and Canada continue to be large importers of U.S. fruits and vegetables. The demand for Western style fast foods in Japan and Hong Kong is growing fast, particularly

among the younger generations. In recent years, price controls and complicated distributions systems as well as specialized labeling and packaging requirements have slowed fruit and vegetable export growth. Nevertheless, future export potential to these countries remains strong, provided marketers align their products to varying country specifications. Newly industrialized countries experiencing rapid growth in personal incomes are also lucrative markets for U.S. fruit and vegetable exports. The East Asian countries of Thailand, Indonesia, Taiwan, and South Korea have more than doubled their importation of U.S. produce since the 1960s (Table 5). Good communication systems and transportation infrastructures exist in these countries. Still, caution must be exercised as government intervention and regulations hinder more rapid market growth.

Exports of fruits and vegetables to developing nations with expanding economies has increased substantially in the last twenty years. For example, the value of fruit and vegetable exports to India surpassed 7 million dollars in 1986 (Table 5).

Table 5. Value of Fruit and Vegetable Imports from U.S., 1962 - 1986.

(in 1000 dollars)

	1962	1966	1970	1974	1978	1982	1986
East Asia	1008	1908	837	2989	6572	12498	4530
Indonesia	4	22	21	908	3694	9261	72
Thailand	NA	32	74	283	78	952	2773
South Korea	115	9	47	33	182	559	468
South Asia	255	57	12	41	997	2872	7140
India	247	21	8	4	997	2738	7066
Middle East	224	314	446	800	582	1981	1967
North Africa	850	38	150	1	289	1772	6645

Source: USDA Stat. Bulletin #774, January, 1989.

East Asia = Burma, Thailand, Indonesia, S. Korea, Phillipines
 South Asia = Bangladesh, India, Nepal, Pakistan, Sri Lanka
 Middle East = Israel, Jordan, Oman, Yemen
 North Africa = Egypt, Morocco, Tunisia

"fruit and vegetables" includes: potatoes, tomatoes, onions, oranges, tangarines, lemons, limes, apples, grapes, raisins, pears, peaches, dates, hops, canned and fresh pineapples

Leguminous vegetables, which compliments the Indian vegetarian diet, comprised the majority of these imports. In the North African countries of Egypt, Tunisia, and Morocco, imports of fruits and vegetable have also increased dramatically (Table 5). Burdened with rising populations and inflation rates, these countries aspire to become modernized and long term economic growth appears favorable. Like India, these North African countries also have cultural and religious practices that influence imports, and governmental bureaucracies can be laborious. Less developed countries have been a strong market for U.S. agricultural exports in the past; however, some of these countries have been experiencing difficulty in repaying their international debts which has slowed U.S. exports; nevertheless, Latin American countries like Columbia and Mexico, with their growing populations and expanding consumption patterns, represent potential markets for fresh and processed fruit and vegetable products.

Produce Destinations and Origins

In recent years, U.S. fruit and vegetable exports in general have been rising; however, as previously mentioned, exports of most processed fruits and vegetables fell sharply in the early 1980s and reclamation of sales has been slow. Of the nearly 2.4 billion dollars of fruit and vegetable items exported between October, 1987 and August, 1988, almost \$1.2 billion was fresh produce (Figure 4). For the past several years, Japan has remained the largest importer of fresh fruit and Canada reigns as the largest importer of fresh vegetables (Figure 6A and 6B). Other countries who purchase substantial amounts of fruits and vegetables from the U.S. are the Caribbean Basin, Hong Kong, and Western Europe. While exports of many canned items has slowed in recent years, frozen fruit and vegetable sales appear to be on the upswing. Adaptation of refrigeration and freezer space in developed and developing countries has facilitated the increase of many frozen products. Countries in the Middle East and the Pacific Rim have been importing larger quantities of frozen french fries while Great Britain has increased its importation of frozen corn on the cob. Exports of dried fruits and vegetables are also increasing, particularly to Western European countries.

U.S. imports of fruits and vegetables totaled more than three billion dollars in fiscal year 1988 (Figure 5). Of this total, 26 percent or more than 800 million dollars, were spent on prepared or processed vegetables. Another 42 percent consisted of frozen and fresh fruit and vegetable imports. Primary suppliers of U.S. fruit and vegetable imports include Western Europe, South America, Asia, and Canada. Less significant suppliers are Mexico, Central America, and the Soviet Union (Figure 6C and D). Complimentary products like coffee, cocoa, rubber, and bananas are commodities the U.S. is unable to profitably produce on a large scale basis. The U.S. imports these commodities as well as many supplementary products including fruits, nuts, and vegetables because domestic production does not sufficiently satisfy consumer demand. Current income levels in the U.S. are such that many consumers can afford imported specialty items such

Figure 6. International Destinations and Origins of Produce

Figure 6A. Destination of U.S. Fresh Fruit Exports
Percent

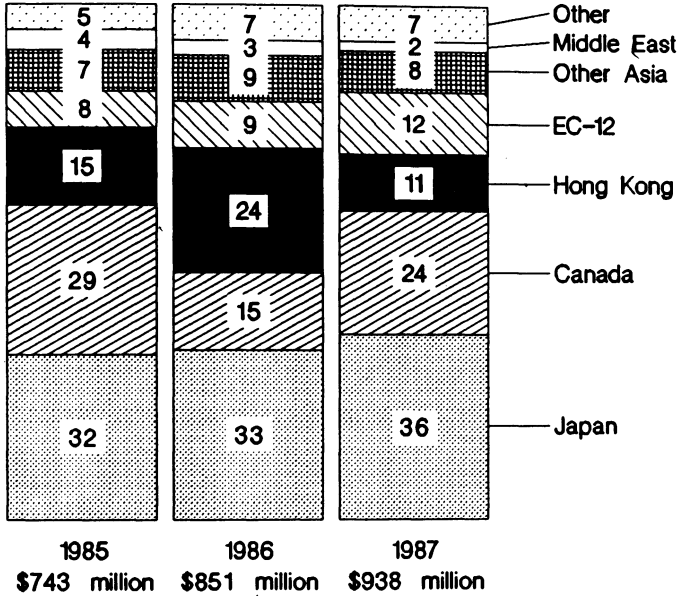


Figure 6B. Destination of Fresh Vegetable Exports
Percent

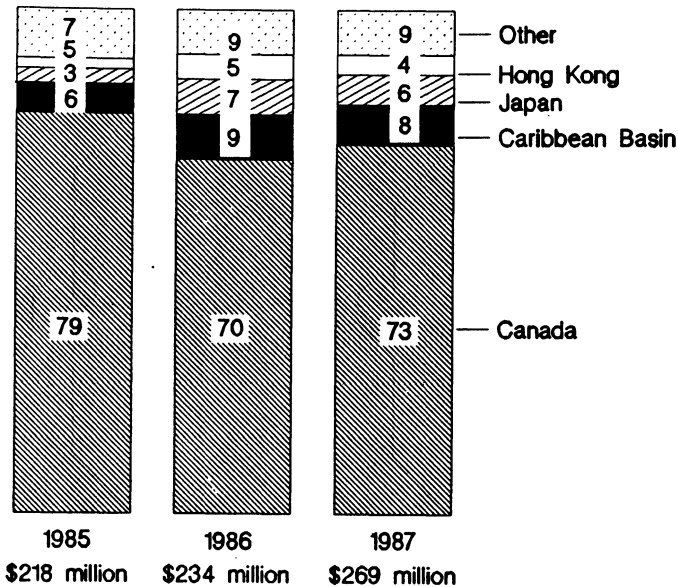


Figure 6C. Origin of U.S. Complementary Agricultural Imports

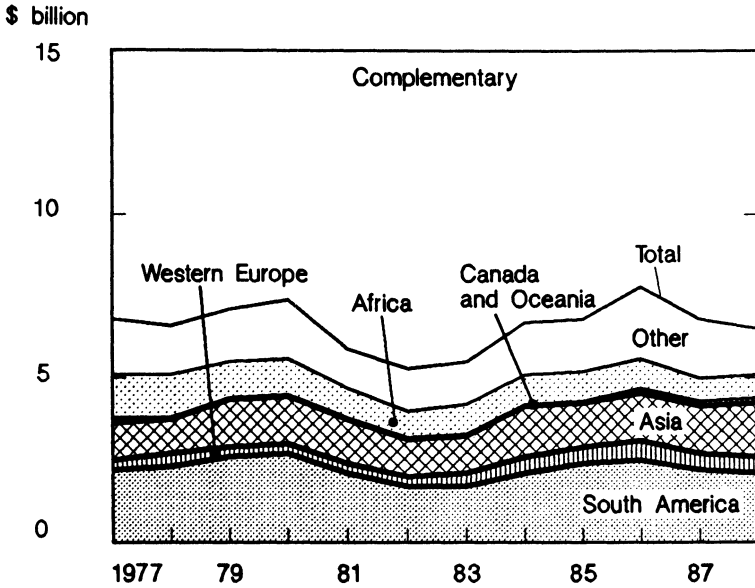
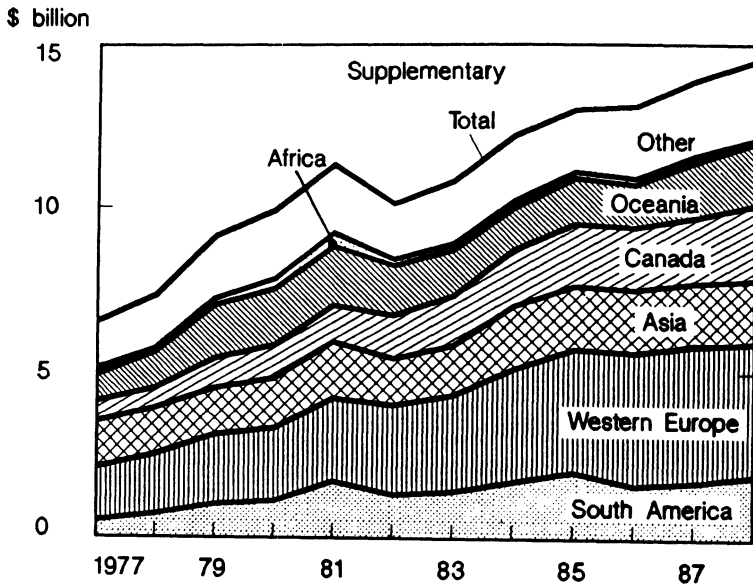


Figure 6D. Origin of U.S. Supplementary Agricultural Imports



Complementary imports are those which do not compete with U.S. agricultural products, such as coffee, cocoa, and bananas. Supplementary imports compete with domestically produced products such as meat and sugar. Other includes Eastern Europe, Soviet Union, Mexico, Central America, and the Caribbean.

as snow peas, jicama, papayas, and other exotic produce. Selected processed vegetable imports such as canned mushrooms, tomatoes, tomato paste, and pimentos have also been increasing in the last few decades (Buckley, et al). The demand for frozen concentrated orange juice in the U.S. has increased so much in the last few decades that domestic supplies are now being reinforced by imports, primarily from countries in the Southern Hemisphere. In fact, frozen orange juice prices have increased to the point where many consumers have begun switching to other lower priced concentrates. As a result, imports of apple juice concentrates have increased in recent years as well.

International Consumer Profile

The changing demographic and descriptive lifestyle patterns of many well developed countries are resembling those of the U.S. For example, European countries are experiencing larger elderly populations and fewer numbers of children under the age of 15. Population growth rates for many of these countries is less than that of the U.S. Even the highly populous country of Japan has a population growth rate of less than one-half of one percent per year (U.S. Central Intelligence Agency, 1988). Moreover, population densities of many foreign countries are becoming increasingly more concentrated in urban rather than rural areas. Per capita incomes of many European and Asian countries are comparable to those of the U.S. With greater per capita incomes, households can afford more expensive food items, including many fruit and vegetable products. A declining percent of disposable income being spent on food is noticeable in foreign countries. In France, households are currently spending approximately 20 percent of their income on food, a larger amount than that of the U. S., but considerably smaller than the 36 percent that was spent in 1959 (Newman & Miesel). The Netherlands, Australia, and Japan are other examples of developed countries that are spending smaller proportions of their income on food. In contrast, countries like the Philippines, Sri Lanka, Ghana, and India continue to spend more than 50 percent of their income on food (Figure 3).

Lower birth rates also affect household composition patterns of foreign cultures. Add to this factor more women in the foreign workplace and the result is fewer structured meals, more incidences of eating out, and a greater demand for processed foods. Again, these demographic patterns are comparable to those in the U.S.. Worldwide emphasis on nutritional awareness has also helped to stimulate the demand for fresh and processed forms of fruits and vegetables in countries other than the U.S.; moreover, as the youth in overseas countries become better educated and more universally mobile, they acquire a taste for Western culture, which helps to explain the success of soft drinks, fried chicken, and hamburger and pizza franchises in many foreign nations.

Value Added-Incentives

The term “value-added” when applied to agricultural products represents the difference between raw commodity costs and the price of the finished output. Raw

commodities that have undergone some form of processing adopt the term “value-added.” The degree of processing significantly affects the value of the product. Consumer ready, unprocessed products such as eggs, nuts, and fresh fruits and vegetables are categorized as high value foodstuffs. In addition to a technically advanced processing sector, the U.S. has an abundant supply of high quality, low priced bulk goods. Despite these advantages, the majority of U.S. exports continues to be shipments of lower value grains, cotton, and oilseeds. Sales of higher value agricultural products from the U.S. to developed countries have grown considerably in recent years, but value-added products from the European Community still dominate world markets.

As raw commodities are converted into final products, incomes are generated and new jobs are created. A 5 percent increase in the U.S. share of value-added exports would have the effect of adding one million jobs and fifty million dollars to the GNP (O'Brien & Lipton, 1985). Food-processing industries are attractive investments that enhance employment opportunities and generate income from processing, packaging, and manufacturing services. Unfortunately, many countries encourage the importation of food products as unprocessed as possible so that the benefits from adding value are localized; however, in some developing countries, population and consumption patterns are expanding more rapidly than local economics which makes the demand for many processed food items still strong.

In some ways, value-added products originating from the U.S. are at a competitive disadvantage. Transatlantic transportation costs incurred by shipping U.S. products to European and North African nations are high in comparison to other foreign nations. Also, countries like Australia, Canada, Brazil, Mexico, and Greece have already established their high value food products in the world marketplace, making access to foreign markets more difficult for U.S. producers. Danish hams, Belgian chocolates, and French and German wines are specific examples; nevertheless, niche marketing can be identified and explored for profitable exporting. Industrialized countries that are especially conducive to high value product import are those with a higher per capita incomes, well developed consumer markets, and favorable exchange rates (USDA, April, 1989).

Oklahoma's Role in Fruit and Vegetable Exports

Oklahoma fruit and vegetable production is currently limited to about thirty different items. In 1987, an estimated 41,320 acres of vegetables were produced. Fruits are grown in Oklahoma on a much smaller scale (Motes, personal communication, 1988). At the present time, much of Oklahoma's fresh produce is being distributed through direct market outlets, which include pick-your-own's, roadside stands, and farmers' markets. A smaller percentage of producers market their produce through wholesale brokers and retail outlets, and a few producers contract their yields to food processors. In Oklahoma, the direct outlet marketing structure is still in the developmental stages. Local producers with the help of the Oklahoma Department of Agriculture are coordinating their efforts to meet the rising domestic

demand for fresh produce by organizing farmers' markets throughout the state. Future formation of produce cooperatives may present opportunities for uniform purchasing and distribution of products. As effective marketing channels mature and domestic demand quotas are satisfied, international markets can and will be more thoroughly developed.

A major impediment to marketing fresh produce internationally is its perishability. Most native Oklahoma fruit and vegetable products have limited shelf lives. Potatoes, sweet potatoes, turnips, watermelons, and specialty melons, such as pumpkins and some squash varieties, do maintain their freshness for longer periods of time. Fresh watermelons, hybrid watermelon seed, and some cantaloupes are being trucked from Oklahoma to parts of Canada in the summer months (Price, personal communication, 1988). Researchers are experimenting with 'shrink wrapping,' a plastic coating which helps lengthen the shelf life of melons; findings could prove advantageous for the exportation of some Oklahoma produce.

Monetary incentives for farmers to grow and supply some varieties of fresh produce is low. The investment return for produce that is inexpensive at the retail outlet is likewise small for producers. Producers, who grow vegetables for contract need to be aware of price incentives or disincentives, as the case may be for their produce. Often times, the receipts a farmer earns from marketing fresh produce, either directly or indirectly through commercial wholesalers, are greater than those he could earn by selling to a processor. Exportation of higher value produce such as fresh packed strawberries and blueberries may have greater monetary returns, provided adequate packaging and transportation facilities are implemented and maintained.

Fruits and vegetables are a major ingredient in a variety of 'value-added' products processed in Oklahoma. Personal interviews were conducted with selected Oklahoma food processors to identify characteristics of 'value-added' products that may be important in generating export activity. Findings concluded that several Oklahoma processors are actively engaged in direct international sales and others may be exporting indirectly via export brokers and other intermediaries. To gain consumer acceptance, one exporting company participates in international trade shows and overseas test marketing activities. For this company, export sales have been provisional based on foreign ingredient approval and bilingual package labeling. Their purchase requirements for local quantity and quality fruits include a minimum of processing. They purchase a variety of fruits that have been individually sliced and quick frozen with moderate additions of lemon juice. Local producers interested in supplying fruits to this firm would need to conform to these specifications.

Another exporter contracts vegetable production in sections of Eastern Oklahoma. Management at this company attributes successful sales in the Mid East, Far East, and Japan and Europe to exceptional quality and foreign demand for U.S. products. For this company, a snack food item has proven to be one of their most profitable exports. Even though their canning process is not altered for foreign buyers, other marketing features have been adopted. They also use bilingual labels

and their products are exported with a requested packing and expiration date stamped into the lid. Chemical usage is also varied during the production of some crops, depending on the final foreign market destination.

Oklahoma fruits and vegetables exhibiting good international sales potential in the future are with few exceptions those currently under production. These include hot weather vegetables indigenous to the state, such as okra, asparagus, onions, specialty melons, squash, southern peas, turnip and mustard greens, and spinach. Experimental crops that may also have future opportunities for export are paprika peppers, and herbs. High quality paprika pepper production was scheduled for Southwestern Oklahoma in 1989. Tillage of this crop can be accomplished by using the same equipment that is used for peanuts. Paprika usage is not limited to seasoning. It is the red dye used in many processed foods and in red food colorings as well.

Packaging of dried fruits, vegetables, and seasonings for soups, which have become popular in European countries, may also have potential for Oklahoma grown produce. Onions, potatoes, peppers, peaches, and apples, all of which are grown in Oklahoma, can be dried and packaged for domestic or international use. Potato and onion varieties grown for drying purposes are different from those raised for fresh use. To insure proper weight and consistency after drying, high concentration matter fruits and vegetables will need to be cultivated. To some extent, this adjustment in production will require additional research and producer re-education. In addition, produce specified for processing may require innovative harvesting techniques as well as special mechanized equipment. These added costs need to be properly assessed before contracts are confirmed and growing commitments are made.

Small businesses can promote their products in foreign markets by capitalizing on quality features. For example, U.S. policy regulating the percent of sugar in jams and jellies is more stringent than other foreign countries. Therefore, even though an abundant assortment of jams and jellies appear in European markets, a market niche may exist for skillfully marketed U.S. products of superior quality. Frozen products require proper packaging and continuous refrigeration en route to insure quality delivery. To overcome delivery problems and encourage consumer product acceptance, product specification, packaging and labeling requirements, along with adequate refrigeration and storage capacity, must be considered prior to an export shipment. Moreover, effective communication skills and other marketing and financial training are necessary prerequisites for international marketing success.

Summary and Conclusions

In the past twenty years, consumers have altered their food consumption behaviors. In the race for market share, per capita consumption of crop products has out paced that of animal products. As a whole, consumers are eating less red meat,

eggs, whole milk, and are consuming more fish, poultry, and vegetable oils. In addition, purchases of whole grain cereals, low fat milk, and cheese have increased. Recognizing the importance of nutrition, consumption rates for fresh and frozen fruits and vegetables have also been rising.

A combination of socioeconomic factors has affected food consumption patterns. Research has shown that income growth and relative price changes affected food consumption in the past; however, in the future, the traditional economic factors are not expected to have significant impacts on the food industry since consumers' responsiveness in terms of food consumption to price and income fluctuations is relatively low. In previous decades, population growth was a major force impacting the volume of food demanded. Rapid increases in population, which in the past assured food industry expansion, no longer exist.

The increased demand for convenience foods is expected to continue into the 1990s. Demographic factors, such as increases in women's labor force participation and the reduction in household size, have had the greatest impact on convenience food purchases thus far and show no signs of a reverse in the near future. Advancements in technology, which transfer the energy and time spent in food preparation to the processor, will continue to influence consumer purchases of convenience foods. Increased incidences of dining out augment the demand for additional food processing as well. Consumer acceptance of product proliferation and variation is instrumental to increased profitability for the food industry; furthermore, the marketing and promotional schemes of food marketers play a crucial role in increasing sales. Food marketers must understand the changing nature of demand and target their promotional and packaging efforts to this changing demand.

Nontraditional retail outlets for fruits and vegetables, such as farmers' markets and roadside stands, have experienced renewed acceptance and steady growth in the 1980s. In 1982, the Oklahoma Department of Agriculture recognized only one public wholesale farmers' market, whereas in the summer of 1989, more than 30 organized markets around the state were selling locally grown produce. Oklahoma farm vegetable receipts from direct market outlets increased 19 percent from 1982 totaling almost 37 million dollars in 1988 (Byers, 1989). In Oklahoma, like many other states, produce freshness is the primary reason consumers shop at these direct market outlets. Future growth will depend upon successful publicity and promotional campaigns that appeal to consumer needs.

Currently, the U.S. is a net importer of fresh and processed fruits and vegetables. Income levels in the U.S. support the importation of speciality produce and many other processed items. Although exports of fruits and vegetables from the U.S. plunged in the early 1980's, the trend is showing signs of reversal. In recent years, the U.S. has increased its share of value-added fruit and vegetable exports even though bulk grains and lower value products continue to dominate. The impact of microwaves in foreign countries is just beginning to be realized. In the early 1980s, only 2 percent of British households boasted microwave ownership. If predictions are accurate, by 1990, almost one in four households in Great Britain

will have a microwave, which will further increase the demand for convenience foods (McNitt, 1985). Many foreign households are just beginning to enjoy the benefits of home refrigeration which has been taken for granted in the U.S. for more than a half century. The future outlook for microwaveable products as well as packaged convenience foods in many foreign countries looks promising.

At the present time, Oklahoma exports a limited volume of fresh and processed fruits and vegetables. The potential for future exports is promising, providing producers and processors are prepared to conform to foreign economic policies and adhere to cultural variations and trade restrictions. Proper investment capital along with additional research will also need to be instituted. The stimulation of international trade by both public and private sectors is necessary to build and sustain long-term trade relationships. Clearly, foreign markets have an identifiable role in the future growth of national and state agricultural product sectors. Greater understanding of specific overseas markets and a commitment to establish and maintain long term relationships plays an integral role in this process. Competitive pricing as well as the consistent delivery of quality products, both traditional and innovative, must be a high priority for U.S. and Oklahoma agricultural producers.

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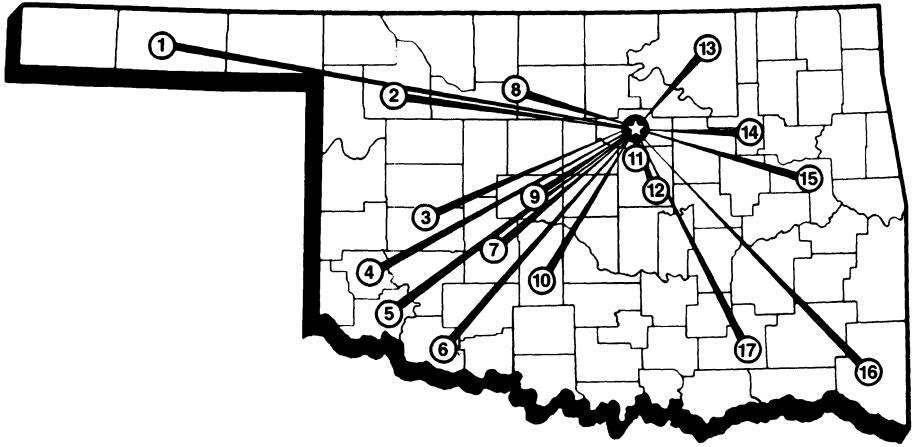
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THE OKLAHOMA AGRICULTURAL EXPERIMENT STATION

System Covers the State



- ★ **Main Station – Stillwater and Lake Carl Blackwell**
- 1. Panhandle Research Station – *Goodwell*
- 2. Southern Great Plains Field Station – *Woodward*
- 3. Marvin Klemme Range Research Station – *Bessie*
- 4. Sandyland Research Station – *Mangum*
- 5. Irrigation Research Station – *Altus*
- 6. Southwest Agronomy Research Station – *Tipton*
- 7. Caddo Research Station – *Ft. Cobb*
- 8. North Central Research Station – *Lahoma*
- 9. Forage and Livestock Research Laboratory – *El Reno*
- 10. South Central Research Station – *Chickasha*
- 11. Agronomy Research Station – *Perkins*
Fruit Research Station – *Perkins*
- 12. Pecan Research Station – *Sparks*
- 13. Pawhuska Research Station – *Pawhuska*
- 14. Vegetable Research Station – *Bixby*
- 15. Eastern Research Station – *Haskell*
- 16. Kiamichi Forestry Research Station – *Idabel*
- 17. Wes Watkins Agricultural Research and Extension Center –
Lane