

REACHING CONSUMERS WITH NOVEL FOODS

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INTRODUCTION

A "novel" item is defined as one that is "new and not resembling something formerly known or used." It is likely that many processed food items of today are indeed novel. However, from a global perspective, there are probably few naturally occurring foods that can be classified as genuinely novel. Practically every plant that grows on the face of the earth--and every animal that wriggles, runs, swims or flies--has been used (or considered) as food by man at some time in some place. From a realistic standpoint, however, most humans have only sampled a very small proportion of the food items that are available worldwide. Thus, many remain more or less "novel." In Third World countries, physical circumstances such as famines and attendant economic conditions occasionally make the adoption of new foods necessary for survival. However, in most developed countries, novel foods simply provide a means of satisfying man's gastronomic curiosity. Realistically, the introduction of new foods also provides entrepreneurs with a chance of economic gain. In the U.S., the profit motive is the catalyst that is primarily responsible for the rising tide of novel foods.

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OBJECTIVES

The purpose of this paper is to identify and discuss the major factors that influence the adoption of novel, natural foods, particularly fruits and vegetables. Several successful novel food introductions spanning the past several hundred years will also be discussed.

Factors Affecting Use of Novel Foods

Throughout the world, most consumers' basic food needs are quite similar. They need foods that are high in quality, healthy in content, simple in preparation, and economical to grow or buy. While these needs appear universal and straightforward, each is relative to the respective environments continents apart. What most people eat today is basically the result of thousands of years of dietary choice. The tenacity with which they cling to their traditional diets is influenced by many factors. Their tastes and preferences may remain deeply ingrained, even though the basic influences which shaped the preferences have been drastically altered or no longer exist. Many of the factors affecting man's propensity to try new foods are inextricably interrelated, and thus there may be considerable overlap. However, the following sections attempt to isolate the basic influences.

Nutritional Knowledge

Early nutritional "knowledge" was probably the result of trial and error; all too frequently, the victims of "error" did not survive. Nevertheless, a body of nutritional knowledge has developed over the centuries and continues to be expanded daily. Consumers' perception and knowledge of nutrition frequently has a profound influence on what they

eat. One of the earliest documented diets that promised to make one "look younger and live longer on a balanced diet" appeared during the Crusades. It was the "Salerno Regimen," a Graeco-Arabic-Italian diet that related the consumption of specific foods to effects on the basic body "humors," namely blood, bile, phlegm and black bile. By altering one's diet, these humors could be manipulated to cure virtually all ailments and promote vigor and vitality. For example, the Salerno Regimen offered this advice: "all pears and apples, peaches, milk and cheese, salt meat, red deer, hare, beef and goat: all these are meats that breed ill blood, and melancholy, if sick you be, to feed on them were folly." This nutritional knowledge influenced European medicine for centuries.

In our modern societies, particularly in the United States, our nutritional knowledge is vastly superior to that of Medieval Europe. For example, we have numerous diets that are designed for virtually effortless weight loss. The Beverly Hills diet prescribes nothing but fruit for five days, followed by nothing but vegetables for five days. The cycle is then repeated. The "Three-Day Prune Diet" is self explanatory, as are the "Drinking Man's Diet," "Dr. Stillman's Water Diet" (16 to 18 glasses of water daily), the watercress and grapefruit pill diets. Fad diets can have a dramatic positive effect on the use of novel foods if the foods are part of a prescribed regimen, and obviously a negative impact if excluded. Legitimate medical research also has the potential to alter diets and can affect use of novel foods as more is known about them.

Physical Characteristics of Products

Products that are too far out of the ordinary typically have less chance of acceptance. Appearance, tactile qualities, organoleptic characteristics and cooking requirements (if applicable) are very important. According to Barbara Webster of the University of California, in discussing the acceptance of a new bean variety in Africa, "If it doesn't look like and grow like something they're used to, the acceptance will be very low. If the seed is not like what is ordinarily found in the marketplace ... then it will probably not sell ..."

Environmental Conditions

Working and living conditions have historically affected man's choice of foods. People in cold, damp climates typically consume rich, fatty foods; those in temperate climates eat calorie-rich foods for the high-energy demands of physical labor, and those in the tropics have consumed more spices and beverages to encourage sweating to keep cool. Environmental conditions are becoming less of a factor, particularly in developed countries because of increased use of heating and cooling systems and occupational shifts to indoor working environments. Even so, regional and international environmental effects should be examined.

Images and Associations

In most cultures, association of a food product with poor classes of people or certain ethnic groups create a negative image that make widespread acceptance difficult. For example, turnip, collard, and mustard greens are generally known in the U.S. as "southern" vegetables and associated with poor blacks. Although "soul food" enjoyed brief

popularity in the 1970's, U.S. per capita consumption of these items continues to decline. On the other hand, consumption of broccoli and cauliflower, items with a more upscale image, has increased dramatically.

Most people have an innate desire to achieve a higher social scale. Thus, if a new food item is virtually unknown, creation of an "upscale" image for the product will usually enhance acceptance.

Economic Considerations

"The nearness of hunger breeds conservatism. Only the well-fed can afford to try something new, because only they can afford to leave it on the plate if they dislike it."

Reay Tannahill
Food in History

Food flexibility, or the propensity to try new items, is a characteristic of affluent societies. A majority of the world's inhabitants spend more than half of their incomes for food. For example, the Chinese spend 60 percent; in India, 54 percent goes for food, and in Poland 37 percent. Russians spend about 26 percent of their incomes for food, and the Japanese 20 percent. In the U.S., only 12 percent is spent for food. The "thrifty" American family of four spends nearly \$3,200 per year on food. The "liberal" budget for an American family of four is nearly \$6,100, the equivalent of what 20 individuals in Haiti have to spend in total for an entire year! Thus, affluent societies such as those in the U.S., Japan and most European countries offer considerably more potential for marketing novel foods.

In countries where subsistence agriculture is still prevalent, adoption of a novel crop or cultivar is frequently perceived as being too risky. The tried and proven old varieties provide virtual assurance of a meager living; the new ones may promise something more, but may also

offer an unknown probability of failure. Such choices may be viewed as a life-or-death gamble, resulting in reluctance to try the new.

Edicts, Decrees and Regulations

Governmental and religious leaders have long influenced people's diets, and introduction of novel foods in many areas is still subject to their control. Meats are subjected to the most universal control, but many fruits and vegetables are also closely regulated by governmental authorities because of pest problems and for economic protectionism.

In the U.S., the USDA's Animal and Plant Health Inspection Service (APHIS) inspects the flow of food products into the country. Importation of many novel as well as commonplace fruits is virtually precluded because of a lack of approved fumigation agents to prevent infestations of certain insect pests. Many other countries have similar regulations. Further, import duties and tariffs also reduce consumers' access to many foods. Currently, the U.S. Food and Drug Administration (FDA) only regulates "food additives." However, if through genetic engineering the composition of a natural food product is "substantially changed," the item could be reclassified as a food additive, requiring FDA approval before it can be sold to consumers.

Contemporary social pressures

A general attitude of flexibility towards foods has emerged in most prosperous countries, and it is also evident among the richer classes in developing countries. This is largely the "yuppie" phenomenon and is closely related to economic considerations. However, greater food flexibility is also the product of increasing foreign travel, and the

psychological effects of "exotic" or foreign foods. Food editors, retailers and industry groups use communications media to extol the excitement and merits of new, untried food items in an unprecedented blizzard of convincing messages. Messages are transmitted to potential consumers via every conceivable form of media and communication, but the advent of the electronic age has given impetus to the entire process. Consumers in prosperous countries can now be convinced to try new things in living color via 45-inch television sets, and people most everywhere on earth can be convinced via transistor radios.

Another social pressure that is particularly evident in the U.S. is the increasing participation in the work force by women. Over half of all married women now work, up sharply over the past few decades. The economic implications are obvious, but there are other effects: novel convenience foods and more new and unusual items are demanded. Convenience foods are necessary because of time constraints, and some fresh fruits and vegetables offer convenience. But the use of new, exotic items may be viewed as a reward for two jobs well done or, by some individuals, as proof that their competency as a homemaker is still intact.

Education is another factor which influences the propensity to try novel foods. Greater levels of education expose consumers to more ideas and increase their willingness to try new things.

A final contemporary social factor is the demographic composition of the populace. Generally, there is truth in the old adage, "You can't teach an old dog new tricks." Younger people are usually more willing to experiment.

Genetic Differences of Man

A number of genetic differences have been observed which can affect people's preferences for certain types of foods. Most of the genetic differences cause enzyme deficiencies, which make some foods difficult or impossible to digest. Lactose intolerance is relatively common among nonwhites. Thus, there may be a reluctance among these populations to consume milk. Non-tropical sprue, caused by gluten intolerance, is not generally associated with people of a specific racial or ethnic group. However, Italians, Greeks, Shepardic Jews, Orientals and American blacks are susceptible to favism, a deadly disease caused by eating broad beans (fava beans) or even inhaling their pollen. Some southeast asians suffer from fructose intolerance. Such genetic differences can cause severe difficulties for certain ethnic groups and certainly affect their preferences for certain foods. However, the overall impact in U.S. markets, particularly with respect to fruits and vegetables, is probably negligible.

The Food Production and Distribution System

The degree of technological sophistication of the food production and distribution system is a major determinant in the process of getting novel foods from the producer to the consumer. Producers must be able to provide a reliable supply of the product, and it must be of sufficiently high quality to survive the rigors of the distribution system. Many novel, exotic produce items are too fragile to survive the trip to the consumer; either the items must be made more durable, or the distribution system must provide more accommodating care.

Significant advances have been made in virtually all elements of the food distribution system in the past century. Space age packaging materials allow soft, exotic fruits to literally ride on a bed of foam from the packinghouse to the consumer. Refrigeration, now taken for granted in the U.S., has only been used commercially to keep food items from deteriorating for about a hundred years. However, in some countries, lack of refrigeration is still a limiting factor at both the producer level and the consumer level. Controlled atmosphere storage (CA) is a relatively recent innovation that extends fresh product availability over a much longer time period, and irradiation may also prove to be extremely useful in extending shelf life. Advances in food processing and packaging, such as aseptic packaging, may also help to promote consumption of new foods by extending shelf life and allowing non-refrigerated storage.

Transportation advances over the past century have dramatically altered the distribution of fresh food items. International journeys that took weeks by ship now take a few hours by air. Even faster and certainly more efficient transportation is being developed which will enable more novel foods to reach more people.

Availability of substitute products

In most developed countries, total food consumption is very stable. For example, in the U.S., total per capita consumption of food has remained at about 1,400 pounds. In the long run, adoption of new foods displaces old foods. Advances in production, packing, storage, and transportation have made many fresh fruits and vegetables available on a year 'round basis. An off-season lull for many popular items would

frequently enable new items to get more shelf space and exposure. Year 'round competition from popular items like strawberries, grapes, plums, etc. make introduction of substitutes more difficult.

Successful Novel Foods

The interchange of novel foods has been occurring since the dawn of civilization, but one of the most active periods occurred after the discovery of the New World. European explorers returned to their homelands with maize, potatoes, chocolate, peanuts, vanilla, tomatoes, pineapple, lima beans, red and green peppers, tapioca, and turkey. To Africa they transported manioc, sweet potatoes, groundnuts and French beans. From Europe, they brought to the New World most of what we consider our common vegetables, also barley, wheat, chickpeas, sugarcane, bananas, rice, citrus and cattle. From Africa, they brought yams, cowpeas, coconuts, coffee and breadfruit. Not all were immediate successes.

In the early 1600's, the potato was discovered in South America and taken to Europe where it was viewed with considerable distrust; it took over 200 years for it to be widely accepted. It was thought to be an aphrodisiac; according to a certain William Salmon, "They increase seed and provoke lust causing fruitfulness in both sexes." In 1619, it was banned in Burgandy because "too frequent use ... caused leprosy." It was also thought to cause syphilis and scrofula. As recently as the late 1700's, starving French and Germans refused to eat it. Today, it is the most popular vegetable in many countries, including the U.S. In 1984, the average American ate nearly 76 pounds of potatoes. Despite a slow start in some areas, it is now quite a success story.

Tomatoes originated in Central America, where they were viewed as weeds in corn and bean fields. Because it was a member of the nightshade family, Europeans thought that the tomato was poisonous, and several hundred years elapsed before it was widely consumed. It, too, has become a success; in 1984, the average U.S. consumption was 33 pounds of fresh and processed tomato products. On a fresh weight equivalent basis, Americans consumed 78.6 pounds of tomatoes.

Bananas have been widely consumed in the tropics for centuries. However, bananas were first imported into the U.S. in 1804 when the schooner Reynard brought 30 bunches from Cuba to New York. The banana remained a curiosity in the U.S. throughout most of the 1800's. It was not until the formation of the United Fruit Company in 1899 and the development of an integrated production-transportation-distribution system that the banana became an important constituent in American diets. Today, it is the most popular fresh fruit in the U.S., with annual consumption averaging about 22 pounds per person.

New foods are constantly being introduced into U.S. markets, and some have become quite successful. Macadamia nuts, virtually unheard of 20 years ago by most American consumers, have experienced a five-fold increase in consumption. Kiwifruit, once a novel import from New Zealand, has become relatively commonplace, and today 15,000 acres are being grown in California. Between 1980 and 1984, there was a 600 percent increase in consumption.

Twenty years ago, avocados were another relatively novel item in produce departments in the U.S. Today, consumption is four times greater than in the early 1960's. Another success is the carambola (star fruit). While exact statistics are not available, its widespread presence in food

stores and publicity in the food industry attest to its growing popularity.

While the entire specialty product market is growing at an annual rate of 20 percent, it is still relatively small, accounting for only one percent of total produce sales. Also, while there are some novel produce items that are shining success stories, there are others that have been available to consumers but have not been extremely successful. For example, Chayote, a squash, has been tried by only four percent of U.S. households; ugli fruit, similar to grapefruit, has been tried by nine percent; and tomatillos by only six percent. Yucca root has been tried by three percent, and Cherimoya by only one percent. Closer to home, grape growers in the south, including Florida, have attempted to introduce muscadine grapes to consumers. Despite relatively good consumer acceptance, the product has not been very successful. The major problems appear to be production and distribution problems and competition from seedless grape varieties.

Summary and Conclusions

Many hurdles must be overcome in devising a successful marketing program for novel foods. Successful marketers will conduct thorough research of the factors discussed above to determine their impact. Presently, economic considerations and contemporary social pressures have created a favorable marketing environment for novel products in many developed countries and particularly in the U.S. The U.S. food distribution system can facilitate product introductions, but the successful marketer must have a product that adequately meets the needs of producers, the food distribution system, and the consumer.