

## **Lesson 11: Fruit, Vegetable, and Nut Products**

Fruits, vegetables, and nuts are important sources of vitamins A and C. They also supply necessary minerals in the human diet. Nuts provide a protein source in snacks, cookies, and confectionery items.

### **Major Classes of Fruits, Vegetables, and Nuts**

Fruits can be divided into six major classes. These categories include melons (cantaloupe, honeydew, watermelon), drupes or single pit fruits (apricots, cherries, peaches, plums), berries (grapes, blackberries, cranberries), pomes or multiple pit fruit (apples, pears), citrus (oranges, grapefruit), and tropical (bananas, dates, figs, pineapples, mango, papaya).

Vegetables are classified relative to the anatomical portion that is eaten. These include earth vegetables (potatoes, onions, sweet potatoes), herbage vegetables (cabbage, spinach, lettuce, celery, rhubarb), and fruit vegetables (peas, green beans, sweet corn, squash, tomato).

Nuts have two classifications: cultivated tree nuts (almonds, Brazil nuts, cashews, pecans, black walnuts), and wild nuts (apricot nuts, bechnuts, chestnuts, chinquapins, heartnuts, hickory nuts, pecans, and black walnuts). Certain nuts may be included in either classification depending on whether they have actually been cultivated or grown in the wild.

While peanuts are classified as legumes, they are processed very similarly to tree nuts.

### **Products**

The products from fruits, vegetables, and nuts are numerous. Fresh fruits and vegetables are in the largest demand. Frozen fruits and vegetables (e.g., corn, lima beans, strawberries) are a product, along with canned fruits and vegetables. Juices obtained from tomatoes, prunes, oranges, apples, and grapes are an important part of the diet, while purees, like baby food and tomato sauce, are also useful products. Processed products like apple sauce and cranberry sauce are other products, as well as, jellies, jams, dried fruits, and vegetables. Nuts are processed into products which include nut meats, shell nuts, cracked nuts, and roasted nuts.

### **Quality Grade Factors**

Fruits and vegetables are graded, based on their quality. The quality grade standards include maturity, instrumental evaluation (used to measure compression/texture and size), color, size, shape, firmness/texture, aroma, variety of fruit or vegetable,

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harvesting method, acid concentration, sugar to acid ratio, and evidence of any disease or physical damage. Canned fruits and vegetables are evaluated on their canned weight. Grades include U.S. Grade A or U.S. Fancy, U.S. Grade B or U.S. Choice, U.S. Grade C or U.S. Standard, and U.S. Grade D or U.S. Substandard.

### **By-Products**

The processing of fruits, vegetables, and nuts produces a variety of by-products used for jelly-making, animal feed, and confections. These include rinds, peels and shells, pits, and non-juice solids.

### **Crop Characteristics**

The variety of fruit, vegetable, or nut determines how it is processed. Processing plants are located in specific regions of the country to efficiently process specific varieties.

Characteristics that determine how a fruit, vegetable, or nut is to be used include: time of maturity and yield, response to weather, pest and disease resistance, shape, size, resistance to physical damage during harvesting and processing, storage stability, suitability to certain processing methods, color of flesh, firmness when cooked and when raw, amount of juice, acidity level, and solids content.

These characteristics are directly related to the molecular composition and, therefore, variety of fruit, vegetable, or nut. There are more than 1,000 cultivars of apples and 3,000 cultivars of pears, for example.

### **Summary**

Fruits, vegetables, and nuts are important components in the human diet. Necessary vitamins and minerals are found in these food sources. Classification of fruits includes melons, drupes, berries, pomes, citrus, and tropical. Vegetables are classified as earth, herbage, or fruit. Cultivated tree nuts and wild nuts are the two types of nuts.

Products are available in a variety of forms: fresh, frozen, juices, purees, canned, jellies/jams, dried, nut meats, in-shell nuts, cracked nuts, and roasted nuts. Quality grades are based on physical and chemical properties and determine how the fruit, vegetable, or nut will be processed. By-products result from the processing of fruits, vegetables, and nuts. The method of processing depends on the variety of the crop.

### **Credits**

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