Nuts and Seeds

A BOWL OF SNACKS for a party contains cashews, peanuts, corn nuts, raisins, and hazelnuts. The bowl contains nuts and fruits, right? Wrong! The bowl contains fruits, seeds, and legumes. Confused? You're not alone! Rules that define what nuts and seeds really are can be complex, so let's take a closer look at how nuts and seeds are defined. Do you think a coconut is really a nut?

Objectives:

1. Differentiate between nuts, seeds, and legumes.
2. Explain the culinary uses of common nuts, seeds, and legumes.

Key Terms:

culinary nuts	hulls	nuts
drupes	kernels	seed
fruit	legume	seed coat

Nuts and Seeds: Similarities, Differences, and Culinary Uses

The terms "nuts" and "seeds" are often confused, and some people use the terms interchangeably. According to the *DifferenceBetween.com* website, the main differences between nuts and seeds are:

- All nuts are seeds. However, all seeds are not nuts.
- Nuts are fruits; nuts are part of the flower. Seeds are not fruits, but they can be seen in fruits.

- Nuts typically have one seed. Seeds are small embryonic plants that, if sewed (planted), can produce new plants. Generally, seeds are smaller than nuts.
- True nuts do not open on their own (indehiscent). Seeds, however, often disperse when pods open and wind, water, or animals spread the contents.
- Nuts are rich in protein, vitamins, minerals, and fats. In contrast, seeds are rich in protein, vitamin B, minerals, fat, and dietary fiber.

NUTS

Nuts (in French "noix;" pronounced n–WAH) are items that consist of a single seed enclosed in a tough shell. Nut—the nutshell or part of the plant that contains the seeds—is the name for numerous types of fruit with a woody, tough, and hard outer shell surrounding and protecting a soft inner skin that encloses an edible kernel. The **kernels** (literally kernels are seeds, especially seeds within fruit) are the soft, edible portion inside the hard shell of a nut or stone fruit.

Fruit

Botanically speaking, it is important to understand that nuts are the **fruit**—the usually edible reproductive part of a seed plant. Most nuts grow on trees and bushes. Culinary nuts may not meet the botanical definition of nuts—items with a single seed enclosed in a tough shell. **Culinary nuts** are edible parts of seed plants that include true nuts, drupes, and seeds.

FIGURE 1. Look at this variety of nuts (and culinary nuts) in their shells. Thick, hard shells are part of the flower that protects the kernel. Why are peanut shells so soft?

Drupes

Drupes are any of several fleshy fruits with a thin skin and a central stone (e.g., peach, cherry, and olive). Although chefs may consider walnuts, pecans, and peanuts to be nuts, all are botanically considered drupes, seeds, and/or fruits. Actually, walnuts and pecans fit the definitions of seeds and drupes. In addition, lychee nuts are small oval fruits (drupes), and peanuts are legumes.

Almonds and walnuts are generally thought of as not having edible shells—a characteristic of true nuts. Yet, while undesirable,

the shells of almonds and walnuts are actually edible. Most chefs and cooks consider almonds and walnuts to be culinary nuts despite the technical definition.

Good Qualities

Most nuts contain very little starch. Chestnuts and cashews are the exceptions. Chefs and cooks prize nuts for their oils that provide rich flavors and aromas in confections and desserts. Nuts are also prized for their texture and the various ways in which they can be toasted, ground, and used as toppings. In addition, nuts are cholesterol-free; low in saturated fat; and nearly sodium free (unless salted during processing). Also, they are a good source of protein, manganese, magnesium, fiber, zinc, and phosphorus and happen to be associated with weight control. Nuts are cited by FDA scientific evidence (not proof) as reducing the risk of heart disease when consumed in moderation (about 1.5 ounces per day). The "nuts" in this healthy heart study are limited to walnuts (seeds and drupes), almonds (nuts and drupes), peanuts (legumes), hazelnuts (true nuts), some pine nuts (seeds), and pistachio nuts (nuts and drupes).

SEEDS

A **seed** is the ripened ovule of a flowering plant: its reproductive unit protected in a seed coat. A **seed coat** is a membrane that grows, covers, and protects the embryo after germina-

DIGGING DEEPER...

UNCOVERING ADDITIONAL FACTS: Are Coconuts Nuts?

The lines often blur between seeds and nuts based on names, plant guidelines about what qualifies as what, and the edible uses of the products. So asking if coconuts are nuts is a fair question.

When comparing a coconut to any other nut, the obvious answer is "no." However, coconuts are nuts that are also considered a seed and a fruit by botanists! Classic drupes actually have three layers: an outer layer (exocarp), a fleshy middle layer (mesocarp), and a hardy woody layer that surrounds the "seed" (endocarp). The coconuts we buy in grocery stores are actually just the endocarp.

At one end of the coconut, we normally see three pores (eyes), and a coconut seed would germinate and come out of one of those "eyes." Like all seeds, the built-in "food" for the seedling is in the coconut too; it is the white flesh that we consider the "coconut" when we eat it. The liquid inside the coconut is a liquid version of that white "flesh" that has not matured into a solid material.

Coconuts are actually dry drupes, and the inner core that we buy in the store is the seed. Because it can grow, it is a seed. Because it is a one-seeded fruit, it could be considered a nut. Because a fruit can be classified as a drupe when a hard, stony shell encompasses the seed (as in a peach), it also meets the criteria of a fruit! As a result, coconuts are one of the most difficult plants to classify.

tion. A seed coat can be paper-thin, like that surrounding a peanut, or as tough as a hull. **Hulls** are the husks or thin hard shells that cover some seeds; they are often inedible.

Botanically speaking, all seeds sprout and reproduce the same plant from which they came. This is the pivotal defining element about seeds. From a culinary viewpoint, some seeds are seeds (e.g., sunflower and pumpkin) and some "nuts" are really seeds (e.g., Brazil nuts, walnuts, and pine nuts). Edible seeds (e.g., sunflower, poppy, and pumpkin seeds) are used in numerous culinary preparations. However, some seeds are inedible: apple, orange, lime, etc. Other seeds are prized for their oils, aroma, and texture. Also, many seeds are sources of protein, vitamin B, minerals, fat, and fiber. Therefore, recipes often list seeds as a part of the batter. In addition, they are easy to toast, grind, and use as a garnish for numerous dishes.

FIGURE 2. Can you identify each of these nuts and seeds?

FIGURE 3. Sunflower seeds have hard hull-type seed coats. Even so, the hulls are still much softer than nutshells.

LEGUMES

A **legume** is the fruit or edible part of a member of the bean, pea, and lentil family. The main difference between a nut and a legume is that a nut typically has one or perhaps two seeds, and a legume has multiple seeds (as in a soybean or a sweet pea pod).

CULINARY APPLICATIONS

Most nuts are available whole, halved, broken, sliced, slivered, or chopped. Nuts are used in cakes, cookies, stuffing, filling, candies, nougat, and ice cream. They are used as garnishes and can be eaten plain as a raw or salted snack. Yet nuts are commonly blanched, roasted, or toasted.

True Nuts

True nuts used in culinary applications are chestnuts, hazelnuts, and filberts (a cousin of the hazelnut). Drupes or culinary nuts include almonds, cashews, coconut, lychee, macadamia, pecans, and pistachios.

Cooking Nuts

Cooking nuts extends their shelf life and improves flavor, but cooking also kills the living element in the nuts if they are technically seeds (e.g., Brazil and pine nuts). Such varieties will sprout and grow if planted.

Nut Products

Nut products include oils (e.g., peanut and walnut), flavorings (e.g., almond, hazelnut, black walnut, and coconut milk), and pastes (e.g., almond, kernel, macaroon, and marzipan). Other nut products include flours such as almond and hazelnut. Common nut butters are peanut (a legume), cashew (a drupe), pine nuts (a seed), macadamia (a drupe), and almond (a drupe).

Allergic Reactions

Peanuts (legumes) and some tree nuts cause allergic reactions in some people. Reactions include itching, rashes, hives, swelling, difficulty breathing, and even death.

FIGURE 4. Marzipan, a sweetened almond paste, is colored and shaped into all types of decorative candies: fruits, vegetables, roses, etc.

Edible

Many seeds are edible (e.g., poppy and sunflower), but others (e.g., apple, pear, and avocado seeds) are not. Some seeds are referred to as nuts. However, a single dried fruit inside a hardened shell in many cases is actually a seed. Walnuts are an example of seeds often referred to as nuts.

Cooking Seeds

Seeds commonly used in cooking for fillings, purées, and garnishes are mustard, pine nuts, poppy, pumpkin, sesame, sunflower, and walnuts (seed and drupe).

FIGURE 5. These small seeds are mustard seeds. They will grow into mustard plants or can be ground into powder for prepared mustards.

Seed Products

Seed products include oils. Their fat and nutrient level is generally less than that of nuts. Also, the fat in seeds is typically monounsaturated, and seeds are a great source of food oils (e.g., canola, corn, cottonseed, flax seed, safflower, sesame, and sunflower). Commonly, seeds are used as snacks and for fillings (especially poppy and sesame seeds), purées, garnish (e.g., cereals and salads), and flours as well as an ingredient in cookie and bread dough. Seed butters include pine nut for cookies and sesame for hummus. Some seeds may come from drupes or single seeds in a fruit, such as an avocado. Other seeds have many seeds within the fruit or vegetable, such as melons and squashes.

Summary:

Specific botanical guidelines separate nuts from seeds. The bottom line, however, is that nuts are actually fruits—the end products of fruit-bearing trees or bushes. Seeds are reproductive tools that all plants generate. Not everything we call a "nut" is a nut. Although all seeds are seeds, they are not all edible. Seeds have seed coats of different strengths designed to protect the seedlings. Nutshells are very hard to protect the fruit within, and the shells are part of the fruit.

Checking Your Knowledge:

1. What are peanuts?
2. What effect does roasting have on nuts and seeds?
3. Why are seed coats softer than nutshells?
4. Nuts and seeds are both high in fat, but they are also considered healthy foods. How can that be?
5. Name five types of nuts and five types of seeds. Which ones are edible?

Expanding Your Knowledge:

Nuts are among the foods with the highest level of allergic response in humans. Peanuts are responsible for the highest incidences of allergic reaction. Reactions include itching, rashes, hives, swelling, difficulty breathing, and even death. One can have a similar response to eating seeds, but seed allergies are far less common. Why? What is it in nuts that causes this extreme allergic response in some people? What can be done if someone is having a serious reaction to nuts? If peanuts are the primary culprits, what are some safe alternatives?

Web Links:

Nut vs. Seed

http://www.newton.dep.anl.gov/askasci/gen01/gen01874.htm

Difference Between Seeds and Nuts

http://www.differencebetween.com/difference-between-seed-and-vs-nut/

Coconut

http://www.loc.gov/rr/scitech/mysteries/coconut.html

Fruits Called Nuts

http://waynesword.palomar.edu/ecoph8.htm

Tree Seeds Western People Eat

http://www.naturalhub.com/natural_food_guide_nuts_common.htm