



TRUFFLES: FREQUENTLY ASKED QUESTIONS

What are truffles?

A truffle is a fungal fruiting body, a mushroom, which develops underground and relies on mycophagy, animals ingesting them, for spore dispersal. Almost all truffles are usually found in close association with trees. The Provençal name for the truffle is "rabasse." A more popular synonym is "black diamond." In fact, truffles come in black and white, and in numerous variants of each of the two colors. A professional truffle hunter in Italy is called a trifulau.

Truffles resemble small potatoes, often between the size of a marble and a golf ball. There are hundreds of different kinds of truffles, and while none are known to be poisonous, only a few of them are considered to be delicacies by humans.

There are hundreds of species of truffles, but the fruiting body of some is highly prized as a food. The 18th-century French gastronome Brillat-Savarin called these truffles "the diamond of the kitchen." Edible truffles are held in high esteem in international haute cuisine.

The Napa Truffle Festival showcases and focuses on the two top species that are widely considered delicacies—the black winter Périgord truffle (*Tuber melanosporum*) and the summer Burgundy truffle (*Tuber aestivum/uncinatum*). Truffles (and mushrooms) are only the "fruit" of the fungus (like an apple to an apple tree); the main perennial fungal body exists as a web of filamentous hyphae in the soil. All of the truffle fungi form at the roots of trees and are essential to the trees' ability to acquire nutrients.

What is the role of truffles in ecosystems?

Truffles (and mushrooms) are the "fruit" of underground webs of fungi. The fungi of all truffles (and many mushrooms) are mycorrhizal. Mycorrhizae are essential in assisting trees obtain nutrients and water from the soil—without mycorrhizae we would not have forests as we know them today. Truffles are also an important part of the food chain via mycophagy. For example, flying squirrels rely on truffles for food, and spotted owls rely on squirrels for food. In turn, the fungi rely on the squirrels (and owls!) for spore distribution; the trees rely on the fungi for nutrient acquisition; the fungi rely on the trees for energy (sugars from photosynthesis); and the owls and squirrels rely on the trees for habitat.

Are any truffles poisonous?

No truffles are known to be poisonous to humans. However, many poisonous *Amanita* and *Cortinarius* mushrooms start out as belowground "eggs" that resemble truffles at a glance. Mushroom eggs (and many truffle species that are only appetizing to squirrels) are generally squishy, spongy or cartilaginous.

Where are truffles found?

Truffles can potentially be found almost anywhere there are host trees. Trees in general fall into those that form mycorrhizal relationships with fungi and those that do not. The top species of truffles that are considered delicacies and have high economic value are usually found in the root system of oak and filbert (hazelnut) trees. Truffles fruit throughout the fall, winter and spring, depending on species and locality. They usually occur at the interface between the organic litter and the mineral soil, about one to six inches deep, but can emerge to the surface or be more than a foot deep. Evidence that small animals have been digging in an area is often a good indication that truffles are about.

How are truffles found?

To harvest the black winter truffle and the Burgundy truffle, dogs and sows are used. Dogs must be trained, and they are very effective in finding truffles. Sows do not need to be trained, as they naturally seek out the truffle scent because it contains pheromones, the sex hormone that male pigs secrete.

Pigs vs. dogs?

Historically in Europe, female pigs have been used to source out truffles. However, more recently, dogs have become the preferred truffle-hunting companion for several reasons, among them: (1) Dogs can be trained to find, but not *eat* the truffles, and (2) Dogs are easy to transport.

Truffle dog training?

The American Truffle Company offers high quality truffle dog training, and the dogs can typically be trained over the course of one or two days. The general principal is to start when the dog is young, acquainting them with the scent of truffles by having them fetch objects with mature truffles inside, and gradually working them up to finding hidden, then buried truffles. There are many factors to consider in training a dog properly; therefore not all truffle dog trainers produce the same results.

Where are the truffle regions?

In their natural habitats, truffles are found mainly in Provence (southeast France), Perigord (southwest France) and Burgundy (Bourgogne). The southeast of France (in the regions PACA and the department of the Gard) produces 70% of French truffles. In a normal year about 50 tons of black truffles are produced. In 2005 there were only 10 tons, resulting in some record high prices for the black diamonds.

When is truffle season?

The prime commercial availability in America and Europe is typically around the holidays—November and December. Burgundy truffle season begins in July/August and extends to December, while black winter truffle season officially begins in December and continues through the following March, and the white truffle season in Italy ranges from August to January.

Which truffles are the gourmet edibles?

French black (Perigord) truffle (*Tuber melanosporum*)

Native to the oak forests of the Perigord region of central and southwest France, it is now widely cultivated in Spain, Australia, and to some extent, the United States. The black Perigord is among the most valuable of truffles at up to \$1,000/pound. It has a blue-black exterior when fresh, fading to brown-black with age and a pungent, earthy aroma. The Perigord season for northern hemisphere is generally December to March. More than 90% of the Perigord truffles produced in France today is from cultivation.

Italian white (Piedmont) truffle (*Tuber magnatum*)

Considered by some (mostly the French) to be second best to the French black truffles, its cost can far exceed that of the Perigord, upwards of \$4,000-\$5,000/lb. It is native to the foothills and mountains of northern and central Italy and southern Yugoslavia. They grow in conjunction with oak, hazel, poplar and beech trees. The flesh is solid, light-colored and very brittle; it is not unheard of for a fresh truffle to shatter if dropped on the floor. Large specimens can weigh as much as a pound, but most are the size of large walnuts. The white truffle is slightly more perishable than its darker cousins, and the flavor and aroma diminishes within a week or two after harvest. The white truffle has a distinctive pepper edge and is often eaten raw. The skin is a dirty beige when fresh, turning a darker brown with age. The Italian white truffles so far have defied all attempts of cultivation and can only be found in the wild.

Burgundy, or Summer truffle (*Tuber aestivum*, formerly *Tuber uncinatum*)

Native to France, Italy and Spain, the summer truffles are usually at their best in December, and can be found from July to December. They have a black exterior and off-white interior, and a relatively light scent. This truffle has been established on plantations in Australia, the United States and many countries in Europe.

Tuscan truffle (*Tuber borchii*, formerly *Tuber albidum*)

Similar to the Italian white truffle in appearance, having a chestnut to muddy tan exterior and a softish interior equally divided between chocolate brown and white. The flavor can be distinctly garlicky.

How large are truffles?

Average sized truffles generally weigh between 30 and 60 grams. The largest found to date was in the Alpes-Maritimes weighing in at 364 grams.

Are truffles indigenous to America?

North America has dozens of species of indigenous truffles, the majority of which are not yet fully classified by science or culinary art, and new species are being discovered every year. Many of these new species are edible, though none have as strong an aroma or economic value as the top native European species.

How much do they cost and where can I purchase truffles?

Truffle prices vary greatly depending on the season. In general, truffles from later in the season tend to be more aromatic and prized than from earlier in the season, and are therefore more expensive. Truffle prices also vary from year to year, depending on the supply of truffles during that year. In low yielding years, truffle prices can double from other years. Currently, the vast majority of European truffle species available in the United States are imported from Europe, and they are readily available on the Internet. Grocery stores generally do not carry truffles, but specialty food and cheese stores in large metropolitan areas may sometimes carry them.

Winter Perigord truffle (*Tuber melanosporum*)

These range in price from \$500-\$1,000/lb, depending on the year and when in the season the truffle is harvested.

Summer Burgundy truffle (*Tuber aestivum/uncinatum*)

These range in price from \$100-\$400/lb, again depending on the year and when in the season it is harvested.

How do I store truffles?

Because the intense aroma of truffles is due to the highly volatile flavor compounds that naturally form in truffles, truffles do not preserve well and are best consumed fresh. Truffles can be stored for several days in a paper bag (never in plastic!) in the refrigerator. They can be frozen for several months in a glass jar, though the aroma declines dramatically. They can be immersed in olive oil, and the oil will absorb the flavor, however shelf life at room temperature is limited without pasteurization. Some people store truffles in dry white rice, but this is not recommended, as the rice will tend to draw the moisture and aroma away from the truffles, diffusing and diluting the aroma. Ideally, truffles should be used as fresh as possible.

How are truffles cooked?

Truffles are generally used raw, or very lightly cooked, because the flavor compounds are highly volatile. The classic backdrops for the intense flavor of these rare and delicious wild mushrooms are mashed potatoes, scrambled eggs, pasta, polenta and risotto. Prepare the dish, then shave raw truffle on top.

How can I start my own truffle farm?

Because truffles are so highly valued and supply is always severely constrained, a truffle farm has high economic values (and can be 7-10 times more profitable than a vineyard, per acre). One needs suitable land to grow truffles, and most land that drains well is suitable for truffle cultivation. The land needs to be prepared and pH amended to the appropriate levels. It is important, however, to employ a management methodology based on science. American Truffle Company provides both the truffle inoculated saplings and the scientific methodology for truffle growers to be successful.

What climate is best for growing truffles?

While truffles naturally occur in Mediterranean climates, with proper scientific management methods, European truffles can be cultivated in most climates in North America. American Truffle Company and its sister company, Mycorrhizal Systems Ltd (England) have clients growing truffles as far north as Finland and Ontario, Canada, and as far south as South Africa. So while there are climates that are naturally more suitable for truffles than others, science and technology have broadened the possible climates amenable for truffle cultivation.

How much land is needed to start a truffle farm?

To achieve economies of scale, generally at least three acres are needed.

Can I plant truffles if I already have oak trees?

If you have oak trees or filbert trees already in the ground, in theory it is possible to inoculate these mature tree roots with truffles. ATC is one of the few groups in the world that has successfully demonstrated mature tree inoculation. However, the best returns are from planting oak or filbert saplings inoculated with truffles from the outset. For this purpose, you will have to clear your existing trees and re-plant with saplings.

Information Sources: American Truffle Company, Wikipedia, North American Truffling Society, baygourmet.tripod.com and beyond.fr.