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Oregon Truffles...a Culinary Delight from the Forest

Mushrooms, conks, and truffles are the fruits of fungi, much as apples are to apple trees. Many of us enjoy fleshy mushrooms as vegetables in our diets even though they are closer to meat in nutrition. Cultivated mushrooms can be purchased in the grocery store or wild ones can be found in many woodland and field environments. Mushrooms grow above the ground’s surface and come in many shapes or sizes—and, of course, not all are edible!

Fungi are complex organisms. Their bodies actually consist of a network (called a mycelium) of thread-like filaments (called hyphae) that live in soil, decaying organic matter, or insect and animal tissue. Fungi can be either beneficial or detrimental to plant growth. Some fungi cause diseases that can harm or kill plants. For instance, many fungi that rot tree stems fruit as conks instead of mushrooms. Conks are the tough to woody shelf-like structures seen on the trunks of infected trees. Root diseases, commonly found in many forest areas, are another example of harmful fungi.

Most fungi in our forest, however, are beneficial. When fungi that are called “mycorrhizal” (literally “fungus-root”) grow in association with plant roots, both the plant and fungus derive benefits. The fungus improves the ability of the plant to extract needed water and nutrients from the soil. At the same time, the plants provide the fungi with carbohydrates that they produce through photosynthesis. This mutually beneficial or symbiotic relationship between the fungus and a plant is essential for both organisms to survive and flourish. All the trees and almost all plants in Oregon’s forests depend on such fungi for their very existence, let alone healthy growth.
Truffles are Important to the Forest

During the past 30 years, much has been learned about the connections between forest plants, animals and fungi. For instance, in old growth forests, the trees, spotted owls, flying squirrels, and truffles are all interdependent. The species of mycorrhizal fungi that produce truffles when they fruit also act as the fine root system for trees. In return, the truffles obtain carbohydrates from the trees that they cannot produce themselves.

Flying squirrels that live in these older forests glide down at night to forage on the ground for food. Truffles, a primary part of their diet, are dug up and eaten with relish. Truffles depend on the flying squirrels, too. When the squirrels defecate elsewhere, they spread the spores of the truffles to new locations. In this way, tree seedlings have little packets of spores from beneficial fungi deposited near their roots.

Finally, the northern spotted owl feeds on flying squirrels. The owls, then, also deposit packets of squirrel- and spore-remains even further away, benefiting trees elsewhere. In turn, the older forest habitat provides shelter and food for the spotted owls and squirrels. Oregon forests have literally hundreds of fungal species that produce truffles and the animals that feed on them also are varied. Such complex, interlinked food webs are more the rule than the exception.

Truffles

Truffles also are the fruiting bodies of mycorrhizal fungi that live in soil and associate with tree roots. But, instead of fruiting above ground, the truffle fruits below ground—and never sees the light of day (unless it is dug up). As a result, most people have never seen a truffle! Yet, truffles are common in the Pacific Northwest—notably in our Douglas-fir forests.

Generally, truffles are round, somewhat bumpy, or irregularly-shaped structures that vary in their mature size from a pinto bean to a man’s fist. All fungal fruiting-bodies (mushrooms, conks, and truffles) produce spores (equivalent to small seeds) to reproduce. Because mushrooms and conks fruit above ground, wind can move their spores around.

Truffles need another method. Almost all truffles are very odiferous when they mature. Mammals such as rodents, deer, bear, elk, raccoons, and pigs actively seek truffles and eat them. The spores pass through their digestive tracks unharmed and get deposited elsewhere. This means of reproduction has important implications for both forests and people.

Really Great Truffles!

Although found in several regions of the world, the most famous areas for truffle production, gathering, and use are in France, Spain, and Italy. The French Black Truffle and the Italian White Truffle have long been considered an essential ingredient in fine cooking in Europe. As far back as the Greeks and Romans, truffles have been used for cooking, as an aphrodisiac, and medicinally. As a result, truffles are among the world’s most expensive natural foods. Top quality Italian white truffles routinely sell for up to $2,000 per pound. In a 2005 auction in Italy, a 2.4 pound truffle (one of the biggest ever found) sold for $52,000, the highest price ever paid!

Only in the past 20 years or so have several species of Oregon truffles become recognized for their culinary quality and potential value in the marketplace. In fact, with truffle production declining in Europe since 1900, Oregon’s relatively untapped supply is gaining more and more notice. None-the-less, Oregon truffles generally command a much lower price in today's marketplace, compared with their European counterparts. Oregon truffle prices vary widely but can range from $50-500 per pound. The type of truffle, its ripeness, and current market demand all affect the price.
Truffles are Important to People

Humans can’t smell as well as most wild animals, and perhaps that is fortunate. All truffles have strong odors, and many are disagreeable to humans. But a few species of truffles around the world cause some people drool. Why this allure? It’s all in the particular odor of a few types of truffles. Grated over a dish of food, a tiny amount of truffle shavings can change a common dish into food for royalty. The ripeness or maturity of the truffle is the key, because the odor only becomes intense when the spores are ready to be released.

Gourmet chefs describe culinary truffles as smelling earthy, musky, pungent, or nutty, or similar to garlic or blue cheese, although none of these adequately describe the odors. Truffles don’t really have much of a “taste”, but the smell is so overwhelming that it infuses any meal (and often the refrigerator). To the non-afficionado, the truffle’s smell is likely to be one that has to “grow on you.”

There are many wonderful recipes for using truffles in cooking and food preparation. The truffle’s aroma and flavor can be destroyed by heat, so finding ways to incorporate their use into food preparation with little or no heat is important. The truffle odor molecules also cling to fat molecules. As a result, one of the classic recipes is a truffle butter, where fresh grated truffles are added to a softened butter for flavoring. Anything from eggs to roast turkeys can be flavored with truffles.

Not only do truffles need to be ripe to develop the strongest odors, but they need to be fresh. Proper handling, quick shipment, and prompt use preserve these qualities and enhance the dining pleasure.

Oregon’s Truffles and their Collection

Two main types of Oregon truffles are currently harvested in the state, the Oregon white truffles (Tuber oregonense and Tuber gibbosum) and the Oregon black truffle (Leucangium carthusianum). The white truffles are actually two species that fruit at different times of the year, but are sold as the same truffle.

So how does one find an underground truffle? Female pigs were originally used to seek them out in Europe because the odor of culinary truffles resembled a male pig’s sex attractant pheromone. Unfortunately, pigs love to eat truffles and it is not easy to reign in a large sow. Dogs can be trained to hunt truffles, too, and are content with other snacks as a reward, so they are commonly used to find ripe truffles in Europe now.

In Oregon, much truffle collection is still done by random raking of the forest floor. This is unfortunate because immature truffles are also uncovered and sold, and their lack of odor diminishes the reputation of Oregon truffles. If Oregon’s truffle industry is to reach its full potential, truffle hunters need to use trained dogs and chefs must demand only ripe truffles. Moreover, raking for truffles is unsightly and might spread tree root diseases on the tines of the rakes.
Where Oregon’s Truffles Grow

Truffles grow from Vancouver Island, British Columbia, south to northern California. Fortunately for Oregonians, prime habitat for Oregon’s culinary truffles (both white and black) is found in young, fast-growing Douglas-fir tree plantations in the foothills of the Willamette Valley. Even Christmas tree plantations near the age of harvesting will produce Oregon truffles. Such “truffle-plantations” can yield annual crops of truffles that far exceed the value of the trees (although both can be cropped in rotation).

Not only are such forests and plantations abundant, privately-owned, and easily accessed, but truffle patches might be easy to establish (if they are not already there). Some truffle harvesters and landowners claim that new truffle patches can be established by grinding mature truffles and spreading them (and thus their spores) in a water slurry. This claim has yet to be verified using scientific methods, but knowing if this is true would benefit the young Oregon truffle industry. Either the method could be used more widely or avoided as a waste of time.

Preventing trespass and unauthorized harvesting can be a concern for landowners who wish to get the most value from their truffle crops. If the landowner does not wish to harvest truffles themselves, making arrangements to provide exclusive access to trusted harvesters in exchange for a portion of the sales price is good approach. Oregon’s truffle industry still needs some improved methods of harvesting and marketing, but the potential economic returns to the state and its citizens are large. To say nothing of the fortunate diners!

Visit the Rediscovery Forest at the Oregon Garden

The Rediscovery Forest located at the world-class Oregon Garden in Silverton provides an opportunity to learn first-hand about Oregon’s forest resources and how they are managed to provide environmental, social and economic benefits.

The Rediscovery Forest offers:
- K-12 school programs and activities
- Special Education events
- Service Learning and Community Service projects
- Teacher workshops
- Adult classes
- Workshops for family forest landowners
- Group tours
- Self-guided tours

For More Information

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PO Box 296, Corvallis, OR 97339-0296
http://www.natruffling.org

New World Truffieres
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