

Mushrooms, Nature's Hidden Treasures

Leader Guide



Objectives:

- Learn about the health benefits of mushrooms
- Explore beyond the white button mushroom--examine the varieties available in the marketplace today and their uses in our cuisine
- Discover how to store and prepare mushrooms
- Enjoy the experience of tasting mushrooms in recipes

Before the lesson:

- Obtain a variety of mushrooms, fresh and dried to show participants. Have mushrooms that show a tight veil and those that have an open veil (the thin membrane under the cap).
- Bring supplies to show how to clean and prepare mushrooms. If planning to demonstrate a recipe, bring the ingredients and supplies for the demonstration.
- For tasting, ask volunteers to prepare and bring recipes that you would like to taste. You are not limited to the recipes in the program materials. There are many good recipes that feature mushrooms. Choose your favorites or go online to www.mushroominfo.com for more recipe ideas. Bring plates or bowls, utensils, and napkins for serving samples.
- Find a seed catalog or print a page from an online seed catalog that shows “grow your own” mushroom kits. (Seed companies that you can look for are: Territorial Seed, Park Seed, Cooks Garden, or search for “mushroom kits”).
- Make copies of participant handout, evaluation, and informed consent statement for all attending.
- If desired, copy the winter salad recipe at the end of the leader guide for participants.

Leaders: In this guide, suggestions for teaching will be in bold italics.

About mushrooms

Mushrooms are not a true vegetable in the sense that they do not have any leaves, roots, or seeds, and really do not need any light to grow. Since they contain no chlorophyll, they don't perform photosynthesis to make their own food. They get food from organic matter in their growing medium. So what exactly is a mushroom? It is a fungus, which grows in the dark and creates more mushrooms by releasing spores.

The mushrooms grow from the tangle of mycelium (which can be very large), forming a stem and a fruiting cap. Between the stem and cap is a membrane called the veil. A closed veil is a sign of a young mushroom. With maturity, the veil opens.

History

Mushrooms are found all over the world and have been a much honored food in many cultures. Ancient Egyptians considered mushrooms to be food for the royals; commoners were forbidden to eat them. Romans had similar laws and called them “food for the gods,” believing that mushrooms gave their warriors extraordinary strength in battle. The French adored the fungus and began harvesting them in caves during the seventeenth century. These famous fungi didn't reach popularity in the United States until the late 1800s.

Growing mushrooms didn't move from a backyard crop to a large moneymaker until 1903 when the United State Department of Agriculture began developing good, locally produced spawn (spores or “seed” of the mushroom). By the 1930's mushroom production had grown throughout the United States, with Pennsylvania being the largest growing area (and still is)—California is second. With Pennsylvania State University research, very rapid growth occurred in the industry in the 70's and 80's. Now we have even more varieties available in our supermarkets today with small growers active in every state. Mushrooms were a seasonal cold weather crop, but with air conditioning and other technological advances (such as growth mediums) fresh mushrooms are available year-round.

How do mushrooms grow?

Mushrooms are grown from microscopic spores. Mushroom farming is a step-by-step process that involves:

- two phases of composting, depending on the mushroom variety grown
- spawning (mushroom laboratory collecting the spores and preparing for “seeding”)
- casing (a soil mixture that acts as a water reservoir that is placed on top of the mushroom spores)
- the compost becomes filled with the “root structure” of the mushroom, a network of lacy white filaments called mycelium
- pinning (the growth stage where the shape of the mushroom forms)
- cropping or harvesting (when the mushroom forms a cap and are ready to pick)

This process will take approximately 15 weeks for white button mushrooms.

It's best to buy your mushrooms from a reputable grower or grocer instead of hunting them yourself, as there are many poisonous mushrooms. Incorrectly identifying them can lead to symptoms of sweating, cramps, diarrhea, confusion, convulsions, and potentially result in liver damage, or even death. Seasonally, wild mushrooms (e.g., morels and chanterelles) harvested by knowledgeable mycologists may be available at farmers' markets and grocers.

Many seed companies today sell “logs” of compost and spawn, ready to create caps in several weeks, depending on the variety—a fun project for the avid gardener during the winter! Just look in seed catalogs (or go to online seed catalogs).

Show an example of seed catalogs with mushroom growing kits.

Mushroom Varieties

There are over 38,000 mushroom varieties today. Some are edible and some are highly toxic. Both domestic and wild mushrooms can be found for sale at farmers' markets and grocery stores. Mushroom growers continue to try to grow some wild mushrooms, but cannot duplicate growing conditions in the forest. The most popular fresh wild mushrooms that can be found in

the market are chanterelles and morels. Here's a small sample of the most popular edible mushrooms you'll see in the market.

Refer to “Mushroom Varieties”, page 3-4 in participant handout. Have an example of these mushrooms if they are available.

Mushrooms and Nutrition

Mushrooms are low in calories, fat-free, cholesterol-free and low in sodium, yet they provide a range of nutrients. They offer many essential nutrients including copper, potassium, and B vitamins riboflavin, niacin, folate, pantothenic acid—plus antioxidants selenium and ergothioneine.

In 2006, new nutrition data for mushrooms was reported. Seven varieties of mushrooms—white button, oyster, shiitake, enoki, portabella, crimini and maitake--were analyzed to create a unique nutrition profile for each. Analysis was done on both fresh and cooked mushrooms. Most nutrients were found to be fully retained when stir-fried and microwaved, while others were retained at between 80 and 95 percent of their levels in raw mushrooms.

White button mushrooms are one of the few natural sources of vitamin D. New research from USDA and the mushroom industry have found that the Vitamin D content of white, brown and portabella mushrooms can be boosted up to and over 100% of the recommended intake of Vitamin D in each 3 ounce serving by exposing them to UV-B light (like that in sunshine)! Scientists are suggesting that commercial production of button mushrooms enriched with vitamin D to improve consumer health may be practical. (See references at the end of lesson for more information.)

Another factor promoting use of mushrooms in the diet is that they add a taste richness and texture to foods that many people enjoy. Vegetarians often use mushrooms as a substitute for meat because it adds unique “meaty-like” flavors and textures to dishes.

Selection and Preparation of Mushrooms

Demonstrate what to look for when shopping for mushrooms and the kind of storage container that is the best. Show a mushroom with open and closed veil. Refer to participant handout as you discuss care and handling and use of mushrooms in family meals.

Selecting and Storing Fresh Mushrooms: Mushrooms are available all year long and although there are many different varieties, selecting any kind of mushrooms is easy. You should look for firm, moisture-free (not dried), unblemished caps, and free of mold. A closed veil (the thin membrane under the cap) indicates a delicate flavor; an open veil means a richer flavor. Always keep mushrooms refrigerated. Place purchased loose mushrooms in a paper bag. If purchased in packages, do not open until ready to use; store unused portion in a paper bag. Airtight plastic bags tend to retain moisture and will accelerate spoilage. Properly stored mushrooms will last for approximate five days.

Show how to clean and prepare mushrooms.

Cleaning and Preparation: Clean mushrooms only when you are ready to use them. Remove any bits of the debris on the surface; gently wipe the mushrooms with a damp cloth, paper towel, or soft brush. Some people prefer to rinse with cold running water, but pat them dry with paper towel. Do not allow them to soak in water.

Dried mushrooms are intensely concentrated in flavor and should be treated more like a seasoning than a vegetable. You'll need to soak the dried mushrooms in hot water for 20-30 minutes, rinse, then chop, and use. (Some mushroom experts recommend soaking in cold water overnight.) Strain and save the soaking water and add it to your sauces or soups to intensify the mushroom flavor.

Mushrooms are versatile and may be eaten raw or cooked whole, sliced or chopped. Certain varieties like shiitake and portabella must have their stems discarded or used as a flavoring agent, as they are often tough. Some mushrooms are better cooked than raw (*refer to notes on particular mushroom varieties—participant handout*).

Preparation Hint: Squeeze a small amount of lemon juice on the mushrooms to retain the color.

Mushrooms are easy to cook and fresh mushrooms are truly a cook's best friend. Whether you need just a little something to dress things up or add a whole new dimension of flavor, your answer is mushrooms.

Go to Participant handout for cooking methods. Have participants share their favorite ways of using mushrooms in family meals. Review how to use mushrooms in family meals.

Preserving Mushrooms for Later. Sometimes mushrooms are a good buy in the grocery and preserving them for later is a good idea. They can be canned, frozen, dried and pickled.

Refer to the SP50-919 Preserving Mushrooms fact sheet for instructions on canning, freezing, drying and pickling mushrooms. (Participant handout)

Summary

The mushroom that was available only for royals is now accessible to all at our local grocery store. This nutritious treasure is an easy to use and tasty addition to family meals. If you have not used a lot of mushrooms in the past, try some new recipes—go beyond cream of mushroom soup in your casseroles by adding the “real thing”!

Finish the lesson by tasting some new recipes. Use ones that feature mushrooms—more than just using mushrooms as a seasoning.

Evaluation

Please take time to evaluate the program by reading the consent form and filling out the evaluation survey. Give participants 5 minutes or so to complete the evaluation. Collect the evaluation forms and return them to your local county Extension Office.

References

About Mushrooms:

- Produce for Better Health and Center for Disease Control, Fruits and Veggies More Matters program. Websites: www.fruitsandveggiesmorematters.org and www.fruitsandveggiesmorematters.gov (go to fruit and vegetable pick of the month)
- Mushroom Council represents mushroom growers throughout the United States. Website with informational materials and recipes. Website: www.mushroominfo.com

Nutrition References:

- “Vitamin D-Rich Mushrooms: A Research Success”, Marcia Wood, November 12, 2009. Agricultural Research Service, Western Regional Research Center, USDA, <http://www.ars.usda.gov/is/pr/2008/081112.htm>
- “Nutrient Data on Mushrooms Updated”, Rosalie Marion Bliss, August 18, 2006. Agriculture Research Service, Beltsville (Md.) Human Nutrition Research Center, USDA, <http://www.ars.usda.gov/is/pr/2006/060818.htm>
- “Discover Mushrooms: Nature’s Hidden Treasure” Nutrition Fact Sheet, *American Dietetic Association*. http://www.eatright.org/uploadedFiles/Public/Nutrition/Fact_Sheets/Mushrooms.pdf

Written by: Janice Gregg, Extension Faculty, Linn and Benton Counties

Reviewed and edited by: Dr. Carolyn Raab, Extension Foods and Nutrition Specialist

Oregon State
UNIVERSITY

Extension Service

© 2009 Oregon State University. OSU Extension Service cooperating. OSU Extension Service offers educational programs, activities, and materials without discrimination based on race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, or disabled veteran or Vietnam-era veteran status. OSU Extension Service is an Equal Opportunity Employer.

Winter Salad with Warm Mushrooms

The contrast of cool greens and warm mushrooms makes this spinach salad a great addition to any meal. The hearty crimini mushrooms add soft flavor and texture, a perfect contrast to the tougher chicory and escarole. This balance is the perfect introduction to these lesser-known members of the lettuce family.

Dressing:

- 1 Tbsp. lemon juice
- 1 Tbsp. balsamic vinegar
- 1/2 tsp. salt
- 1/4 tsp. freshly ground black pepper
- 2 Tbsp. extra-virgin olive oil

Salad:

- 4 cups packed baby spinach leaves
 - 3 cups packed chicory or curly escarole in bite-size pieces (or substitute spring greens)
 - 1 lb. crimini mushrooms, quartered (or sliced desired)
 - 3 large garlic cloves, minced
 - 1 1/2 tsp. dried thyme
 - 1 shallot, minced (or 1/4 onion, minced)
1. In a small bowl, whisk the lemon juice, vinegar, salt and black pepper. Whisk in the oil. Set the dressing aside.
 2. Wash and prepare the vegetables.
 3. In a mixing bowl, combine the spinach and chicory or escarole, and set aside.
 4. Meanwhile, heat a dry, medium-skillet over medium-high heat until a drop of water dances on its surface. Add the mushrooms and cook, stirring occasionally, until they look moist (about 4 minutes). Mix in the garlic and thyme and cook, stirring, until the mushrooms are chewy but not soft (1-2 minutes). Mix in the shallot and set the pan aside.
 5. Pour the dressing over the greens and toss to coat them. Divide the greens among 4 salad plates. Spoon one-fourth of the warm mushrooms over each salad. Serve immediately.

Makes 4 servings

Per serving: 140 calories, 7 g total fat (1 g saturated fat), 17 g carbohydrate, 5 g protein, 4 g dietary fiber, 340 mg sodium

Recipe adapted from: AICR, Health e Recipes, December 1, 2009