



GARDEN ODDITIES

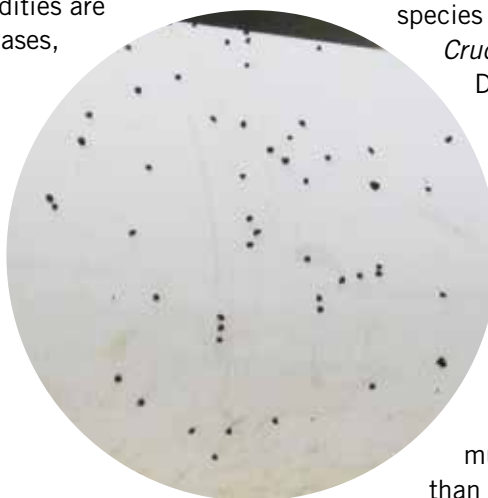
Mulch Fungi in Rose Gardens

by **ALAN WINDHAM, JOHN OLIVE & MARK WINDHAM**

FUNGI ARE QUITE AN ABUNDANT and diverse group of organisms. Abundant? It's been estimated that there's more than 3,000ft of fungal hyphae (strands) in a teaspoon of garden soil. Fungi range from the invisible to those with large fruiting bodies that are easy to spot. They come in varied shapes, textures and colors. Fungi use different strategies for spore dispersal. Some fungi passively release spores to the wind, while others forcibly eject spores from fruiting bodies or they depend on splashing water, insects or mammals for spore dispersal. Some fungi, such as stinkhorns, produce a malodorous scent (think decaying flesh) to attract insects to aid in spore dispersal. In the garden, the most bizarre fungi are called "garden oddities". These oddities are not plant pathogens, and in most cases, they aren't particularly beneficial like mycorrhizal fungi. Odd fungi, that you might see in beds high in organic matter and/or covered with bark mulch include: slime molds, splash cups, artillery fungus, stink horns, puffballs and those that produce mushrooms. Let's take a look at fungi you might encounter in each group.

SPLASH CUPS/BIRD'S NEST FUNGI get their name from the way they look and the method for spore dispersal. The fruiting body resembles a tiny bird's nest complete with a cache of eggs). The fruiting body varies in size depending on the species, but is usually in the range of 0.2 – 0.5 in across. The 'eggs' are actually structures called peridioles which are full of spores. Dispersal of the eggs occurs when a drop of water hits the open cup and the eggs are splashed as far as seven feet. When the eggs are dispersed each trails a white cord of hyphae called a funicular cord. This cord makes the eggs easy to distinguish from the spore masses of artillery fungi. There are a number of genera and species in this group with *Cyathus* and *Crucibulum* being the most common.

Diagnostic labs often see peridioles of bird's nest fungi on various leaves of perennials, vegetables and roses. They are usually black and may be so numerous that clients think they are related to infestation of scale insects.



ARTILLERY FUNGI are in the genus *Sphaerobolus* and much smaller (less than 0.1 in wide) than splash cups. The name *Sphaerobolus*



STINKHORNS could be the oddest fungi you will find in your garden. They come in a variety of colors, shapes and smells. They may be club shaped, have lattice like structure or even look like a bizarre sea creature. There are several genera of stinkhorns, the most common are *Mutinus*, *Phallus* and *Linderia*. Stinkhorns may be smelled before you see them in your garden. The odor attracts flies and other insects that are important aides in assisting with spore dispersal. It's not uncommon for one to find stinkhorns before they emerge in your mulched beds. White, egg shaped gleba from which the stinkhorn arises are sometimes mistaken for reptile eggs because of their white color and size. When moisture and temperature are favorable, a stinkhorn may appear overnight. Again, it's often the smell that alerts you to their presence. The elegant stinkhorn, *Mutinus elegans*, forms a single, pink to red narrow stalk 4 – 7 inches which is often tipped with a gelatinous, very odorous slime. A similar stinkhorn is *Phallus rubicundus*, which has a small brown cap, which is loosely attached to the tip. The columnar stinkhorn, *Linderia columnata*, is often found in the Deep South. It erupts from a gleba, and produces 3-7 red to orange columns that are joined at the top. These can be 4 – 6 inches tall. Stinkhorns are often short-lived and will sometimes disappear as rapidly as they appeared. Use a shovel or rubber gloves to remove as the odor may be difficult to wash from your hands.

means 'sphere thrower'. The fruiting bodies are often difficult to spot. It's the small, black spore masses (peridioles) projected onto homes, cars and plants that give their presence away. Artillery fungi are light sensitive. Their fruiting bodies will rotate so that spore masses are projected toward white surfaces or sources of light. These black spore masses are often found strongly adhered to house siding or light-colored cars. Artillery fungus spore masses may be ejected as far as 17 feet. Like bird's nest fungi, they do not damage plants, but these tiny projectiles are often difficult to remove. The black spore masses can be difficult to wash off leaves and canes. Artillery fungi are often found on hardwood mulch. If desired, incidence can be reduced by choosing an alternative mulch or mixing mushroom compost with mulch.



OPPOSITE PAGE, TOP TO BOTTOM: Splash Cup/Bird Fungus - *Cyathus striatus*; Artillery Fungus; ABOVE: Stinkhorn - *Phallus rubicundus*; RIGHT: Stinkhorn - *Mutinus elegans*; all photos courtesy Alan Windham.

SLIME MOLDS are no longer included in the Kingdom Fungi, but are in their own stand-alone group, Kingdom Protista. Let's just say that slime molds are more than meets the eye. Yes, many slime molds that we see on mulch are gelatinous, at first



and in varied colors, and they move slowly in your garden. If you visit your rose garden in early evening you may find the yellow, gelatinous, amoeboid stage of a common slime mold, *Fuligo septica*. This slime mold is known as the dog vomit slime mold. It's one of the most common slime molds on hardwood mulch and often completes its life cycle in less than 24 hours. The life cycle of this slime mold starts as numerous single celled spores germinate at the same time and

merge to form a large amoeba like animal. In the case of *Fuligo septica*, it's a bright yellow blob. Overnight, it moves and changes shape several times. As it moves across mulch it consumes other microbes and small creatures. If you saw Steve McQueen's first movie, *The Blob*, you have an idea of how a slime mold moves and grows. By the next afternoon, this gelatinous creature has dried to a dusty mass of spores that are dispersed until conditions are right for germination. You may have noticed the dusty, gray slime mold, *Physarum cinereum* on your lawn or another, *Lycogala epidendrum*, common name wolf's milk slime mold, which forms spherical structures with gelatinous centers. Regardless of the slime mold, they're harmless to you and your roses.

TOP ROW, LEFT TO RIGHT: Slime mold - *Fuligo septica*; mushrooms - *Leucoagaricus americanus*; puffball - *Lycoperdon perlatum*: ABOVE, LEFT TO RIGHT: Columnar stinkhorn - *Linderia columnata*; Mushroom - *Leucocoprinus birnbaumii*; OPPOSITE PAGE, BOTTOM: Slime mold - *Lycogla epidendrum*; all photos courtesy Alan Windham.



MUSHROOMS are fungi that are frequently observed in landscape beds high in organic matter or those covered with bark mulch (the perfect description of most rose beds). There is one plant pathogen of roses that produces mushrooms (*Armillaria*), but most mushroom forming fungi are harmless to plants. One of the most common mushrooms found in landscape beds and containers is *Leucocoprinus birnbaumii*. It has several common names: yellow houseplant mushroom, yellow parasol, the yellow dappling. As the common name indicates, it is easily identified due to the yellow color of the mushroom and hyphae. Containers infested with *Leucocoprinus*, may have an extensive network of mycelium throughout the bark substrate, which may interfere with water infiltration. A large, tan mushroom forming fungus, *Leucoagaricus americanus*, is often found growing in mulch piles and landscape beds. It's harmless to plants but like the *Leucocoprinus* it may affect water movement if the mulch is extensively colonized by its hyphae. We do not recommend foraging for wild mushrooms, unless you have been well trained by experts. To learn more about mushrooms join a local mycological club that host forays and teaches members how to identify all types of fungi.

PUFFBALL FUNGI are common in lawns and sometimes mulched landscape beds. Some of the more common puffballs are in the genera:

Geastrum, *Lycoperdon* and *Calvatia*. In landscape beds, earth star puffballs may be overlooked as they blend into the mulched beds. Puffballs produce massive number of spores which are released in various ways. Rain drops may aid dispersal as they impact the puffball and cause a puff of spores to be released. Other puffballs may release spores as outer covering fractures when mature. Puffball fungi are harmless to plants



These fungi is harmful to plants, but they are often the subject of calls or emails to plant diagnostic labs and horticulture departments. Being able to identify these garden oddities is useful in educating novice rose growers, as well as preventing unnecessary chemical applications. As most mulch fungi are more common on hardwood mulch, try a different bark mulch or pine needles if you wish to see fewer of these odd fungi.

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