

Nuisance Fungi in Landscape Mulch

Stephen Vann
Assistant Professor -
Urban Plant Pathologist

Mulch offers several significant benefits in the landscape. It can suppress weeds, conserve soil moisture, create a protective buffer zone around plants and enhance the beauty of the landscape. Inorganic mulches are composed primarily of crushed stone, rock or gravel. These materials decay at a very slow rate or none at all. Organic mulches are those that include wood chips, grass clippings, pine needles, sawdust, tree bark, shredded leaves and straw. These mulch materials decay over time, some at a faster rate than others. Mulch derived from the bark of soft-wood trees such as pine and cypress tends to be resistant to decay. As the mulch decomposes, it can also support the growth of various decay fungi that can potentially damage property and annoy the property owners.

The bird's nest fungi, artillery fungi, slime molds and stinkhorn fungi are all saprophytes which are often seen growing on decomposing wood mulch in the landscape. They may also occur in the forest on decaying trees and in leaf litter. Some slime molds and stinkhorns can be occasionally seen growing in the lawn where they seem to "pop up" overnight after a rain shower during the summer months. Since all of these fungi live only on decaying plant matter, they do not harm living plants. The bird's nest fungi and artillery fungi can be a particular nuisance since they can forcibly eject their spores in hard "egg-like" structures called peridioles. These structures are actually packets containing

spores of the fungus. They can be ejected up to several feet from the fruiting bodies. The sticky peridioles adhere to plant foliage and other surfaces, including home vinyl siding and automobiles that are located close to the fruiting bodies in wood mulch.

Because of their size, the bird's nest and artillery fungi are rarely noticed unless they are brought indoors on container-grown plants or if light-colored cars are parked close to mulch containing these fungi. The first sign is small round shiny black or dark brown objects resembling seeds or insects on the leaves or sometimes stuck on the walls near these plants. These are the peridioles that have been ejected by the fungi. If unsightly, they can be picked off the leaves. Removing them from interior walls and other surfaces may pose a real challenge to the homeowner.

Bird's nest fungi look like miniature bird's nests or cups nestled in the mulch. *Cyathus* sp. is the largest and most common genus of the bird's nest fungi. The "nests" are only about 1/4 inch in diameter and vary from gray, white or yellowish in color. The shiny "eggs" (peridioles) are clustered inside the nest (FIG. 1-2). The peridioles are usually black or dark brown and 1-2 mm in diameter. Immature fruiting bodies in the mulch or soil look like tiny puffballs, which open into cups as they mature. During dry periods, the edges of the nest may collapse inward to conserve moisture. The peridioles of bird's nest fungi are propelled out of the nest by falling

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water drops from rain or irrigations that strike the interior of the cups. These peridioles can travel over a distance of 3 feet or more. When a peridiole strikes a solid object such as a leaf or twig, it sticks to the surface either directly or by a fragile hair-like tether attached to the peridioles.

The artillery fungi (*Sphaerobolus* spp.) is also sometimes referred to as the sphere throwers or the cannon fungus. This fungus is also a wood decay fungus. It is often confused with another fungus called the “shotgun” fungus (*Pilobolus* sp.). *Pilobolus* can also propel its spore structure as well but is more commonly found growing on horse dung than wood mulch.

The artillery fungi can be found growing alongside the bird’s nest fungi in mulch or leaf litter but are considerably smaller (0.1 inch) in diameter (FIG. 3-4). The whitish or yellowish-pink immature fruiting bodies are round balls similar to immature bird’s nest fungi. Pressure builds up inside the cup and can launch the peridiole more than 15 feet before sticking to any surface it impacts. The peridiole quickly dries to a flat “disk” or “round speck.” Wind can also assist in the overall distance traveled. This is considerably farther than the bird’s nest fungi can propel their spore packets. High moisture and high temperatures (70°-80°F) favor fruiting body formation. The biggest annoyance that the artillery fungi pose is the fact that the peridioles can stick like glue to vinyl siding, gutter downspouts of houses, windows and automobile finishes (FIG. 5). Peridioles are often propelled toward bright sources of light such as white siding or light-colored vehicles. Insects, splashing tar and other fungi were blamed for the appearance of these “specks” on various surfaces before the artillery fungi was identified as being the culprit (FIG. 6). These small (1-2 mm diameter) peridioles are difficult to remove, especially if they are allowed to dry. They can permanently stain the surfaces to which they have adhered, particularly when they occur on light-colored automobiles.

Both the bird’s nest fungi and the artillery fungi are often referred to as “ballistic fungi” since they expel their spores either by water splashes or by their own energy.



FIG. 1. Bird's nest fungi in shredded mulch.



FIG. 2. Bird's nest fungi with “eggs.”



FIG. 3. Artillery fungi (*Sphaerobolus* sp.) in mulch. (courtesy G. Emberger – Messiah College)



FIG. 4. Fruiting bodies of *Sphaerobolus* sp. (courtesy G. Emberger – Messiah College)



FIG. 5. Peridioles of *Sphaerobolus* adhering to vinyl house siding. (courtesy G. Weigel)



FIG. 6. Peridioles of *Sphaerobolus* adhering to various plant leaves.



FIG. 7. Slime mold (*Fuligo* sp.) fruiting body.

Slime molds are a group of primitive fungi that are also seen on moist decaying mulch where they feed on bacteria. The dog vomit slime mold, or scrambled egg slime mold, (*Fuligo* sp.) is perhaps the most commonly encountered and largest slime mold found in mulch (FIG. 7). They are usually seen in Arkansas during May through September and are favored by damp and shady conditions. Sometimes slime molds use low-growing plants such as strawberries or Lirope for support, giving them an unsightly appearance. They do not eject their spores as the bird's nest and artillery fungi, but rely primarily on wind and water for dispersal. Spores of the slime molds can remain viable for several years. As the body of the slime mold matures, it changes from a wet, slimy consistency to a crusty mass either on the mulch or on the lower portions of landscape plants. The crust-like appearance is usually considered objectionable or unappealing in a well-manicured landscape.

The elegant stinkhorn (*Mutinus elegans*) mushroom has a characteristic long and tapered stalk. This particular mushroom is often seen in Arkansas during July-September. It is sometimes called the "devil's dipstick" and can be found on the forest floor, cultivated fields and in urban landscapes. It is pinkish orange in color with a dark green to brown slime material located at the top of the stalk (FIG. 8). The spores produced by this mushroom are located in this slime layer. Flies which are attracted to the putrid-smelling slime serve to disperse the spores. The 4- to 7-inch "finger-shaped" stalk arises from a sac-like cup structure that is partially buried in the mulch or leaf litter. The elegant stinkhorn has a very unpleasant and offensive smell. The smell exuded by this mushroom has been compared to that of rotting meat, particularly on a hot day. Most people usually smell it before seeing it. This stinkhorn mushroom can also grow on old wood, dead leaves and in rich soil. In addition to the horrific odor, it can also be a nuisance because of the insects that it attracts.



FIG. 8. Sporophore of the elegant stinkhorn (*Mutinus elegans*) (courtesy E. Dutky – Univ. of Maryland)

Management

When the bird's nest fungi and artillery fungi become a nuisance, homeowners should consider either adding another layer of mulch or switching from organic mulch to inorganic-based mulch such as rock, especially near parking lots or buildings. Layering wood mulch may only be a short-term solution since the spores may survive for several years in the decaying mulch layers only to reappear later. Pine or decorative hardwood bark nuggets may be a beneficial solution since they do not readily support the growth of the bird's nest and artillery fungi as do the shredded hardwood mulches.

To help control these fungi in container plants, remove any fungal fruiting bodies from the surface of the soil. Repotting the plant in a potting medium that does not contain composted manure or wood should help prevent the fungi from returning or flourishing. For controlling slime molds in landscape mulch, periodically raking the mulch surface or hosing them off is usually sufficient to control these oddities. If left undisturbed, they usually dry up and disappear during hot weather conditions.

For the elegant stinkhorn mushroom, physical removal is usually sufficient. Be sure to wear gloves and a clothes pin on your nose if you are removing a mature mushroom! Replacing decaying mulch with fresh mulch or rock-based mulches may be useful to discourage these foul-smelling mushrooms.

Removal of the mushrooms or mulch replacement with an inorganic substrate is often the best management practice if these fungi become a significant nuisance in the landscape. No chemicals are recommended for control.

Additional Information

For further information about nuisance fungi and plant diseases in the landscape, contact your local county Extension office or the Arkansas Plant Disease Clinic at ssmith@uaex.edu.

Additional related fact sheets are available at <http://www.uaex.edu>.

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DR. STEPHEN VANN, assistant professor - urban plant pathologist, is with the University of Arkansas Division of Agriculture, Little Rock.

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