



Mulch Mushrooms, Slime Molds & Other Saprophytes

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INTRODUCTION

Organic mulches, such as shredded cypress and pine bark, are commonly used in commercial and home landscapes. Mulches provide numerous benefits, including conservation of soil moisture and suppression of weeds, as well as offer a visually pleasing background for landscape plantings. However, mulch is also a substrate for a diverse group of saprophytic organisms (saprobes), such as mushrooms and slime molds. While often causing alarm to gardeners unfamiliar with them, saprobes do not infect plants or cause plant diseases. The following overview is intended to dispel concerns while focusing on the beauty and benefits of mulch saprobes.

BENEFITS

Saprobes are microorganisms, such as fungi and slime molds, which decompose plant materials (including wood mulch and leaves). These scavengers get their nutrients from nonliving organic materials. They are not pathogenic, so they do not cause plant disease. A variety of saprobes are needed to completely recycle nutrients from organic matter, so it is advantageous to have diverse variety of beneficial fungi present and growing in garden beds.



FIGURE 1. *MYCENA* MUSHROOMS (A & B) ARE COMMON INHABITANTS OF MULCH. THESE TINY, FRAGILE MUSHROOMS HAVE CAPS THAT ARE LESS THAN 1 INCH ACROSS. APPEARING IN ABUNDANCE AFTER A RAIN, THEY SEEM TO PRACTICALLY POP UP OVERNIGHT.

Mulch fungi break down organic matter, such as plant debris and wood mulch. This process releases nutrients back into the soil, thus improving soil fertility. Mulch fungi can include species that are mostly invisible or mushroom-producers that send up fruiting structures.

Slime molds are not fungi, but they have life cycles similar to saprophytic fungi. They obtain nutrients from already-decomposed matter. The presence of slime molds is typically a sign of high organic matter and healthy soils.

COMMON MULCH SAPROBES

Mushrooms

Mushrooms are the visible fruiting (reproductive) structures of a certain class of fungi (Agaricomycetes), most of which are beneficial. The main body of these fungi survive within mulch or soil where it remains unnoticed for most of the year. The mushroom phase of their life cycle usually becomes evident after prolonged periods of rain. Common mulch fungi include tiny *Mycena* mushrooms (FIGURE 1) as well as larger mushrooms (FIGURE 2).



FIGURE 2. LARGER MULCH MUSHROOMS, SUCH AS THIS *AGROCYBE PRAECOX*, MAY HAVE CAPS THAT ARE SEVERAL INCHES ACROSS; SOME MAY BE POISONOUS.

Interesting & Unusual Fungi

Many mulch fungi have non-typical aboveground reproductive structures that emerge after rainy weather. Like mushrooms, their main body grows throughout the soil or mulch. Some of these include stink horns (FIGURE 3), puff balls (FIGURE 4), birds nest fungi (FIGURE 5), and artillery fungi (FIGURE 6).

Slime Molds

Slime molds are single-celled, amoeba-like organisms that become visible as aboveground colonies. During periods of extended rain, they grow out of the soil and creep onto mulch and other surfaces close to the ground. After a brief slimy stage, they become dry with masses of dark, powdery spores (reproductive stage). Slime molds may emerge on mulch (FIGURES 7, 8 & 9), grasses (FIGURE 10) and weeds, low-growing plants, and logs. One of the most notable (and noticeable) slime molds is one referred to as “dog vomit” (FIGURES 7 & 8).



FIGURE 3. STINKHORNS ARE FOUL-SMELLING MUSHROOMS THAT ARE GENERALLY IN THE SHAPE OF A HORN, OFTEN WITH SLIMY CAPS; COLOR VARIES DEPENDING ON THE SPECIES. WHILE OFF-PUTTING TO PEOPLE, STINKHORNS ARE ATTRACTIVE TO INSECTS, ESPECIALLY FLIES.



FIGURE 4. PUFF BALLS ARE BALL-LIKE FUNGI THAT MAY OR MAY NOT HAVE A SHORT STALK. A CLOUD OF SPORES POOF FROM MATURE PUFFBALLS ONCE THE OUTER FUNGAL LAYER IS BROKEN.



FIGURE 5. BIRDS NEST FUNGI LOOK LIKE TINY NESTS (ABOUT ¼ INCH ACROSS) CONTAINING SEVERAL TINY, METALLIC APPEARING “EGGS” (PERIDIOLES) THAT ARE ACTUALLY FILLED WITH SPORES. “EGGS” ARE DISPERSED INTO THE AIR WHEN HIT WITH DROPLETS OF WATER.



6A



6B

FIGURE 6. ARTILLERY FUNGI ARE EXTREMELY TINY (1 TO 3 MM WIDE) AND THEIR PRESENCE OFTEN GOES UNNOTICED IN MULCH (A); HOWEVER THE DAMAGE THEY CAUSE DOES NOT (B). ARTILLERY FUNGI SHOOT OUT MASSES OF FUNGAL SPORES THAT STICK AS TAR-LIKE SPECKS ON HOUSE SIDINGS, CARS, AND OTHER NEARBY SURFACES. THE BLACK SPECKS ARE DIFFICULT TO COMPLETELY REMOVE AS THEY OFTEN LEAVE BEHIND A STAIN.



FIGURE 7. SLIME MOLDS MAY CAUSE ALARM WHEN THEY ARE FOUND IN CONTACT WITH LANDSCAPE PLANTS. HOWEVER, THEY JUST USE MULCH AND LOW GROWING VEGETATION AS SUPPORT FOR THEIR REPRODUCTIVE STRUCTURES AND DO NOT CAUSE DISEASE.

FIGURE 8. SOME SLIME MOLDS, SUCH AS THIS ONE, ARE APTLY NICKNAMED “DOG VOMIT” FUNGI, ALTHOUGH SLIME MOLDS ARE NOT TRUE FUNGI.

FIGURE 9. SLIME MOLDS MAY INITIALLY APPEAR BRIGHT YELLOW (A), BUT DARKEN WITH MATURITY (B).

FIGURE 10. HEAVY SLIME MOLD GROWTH ON GRASS LEAF BLADES CAN SHADE FOLIAGE AND RESULT IN MILD YELLOWING.

TO REMOVE OR NOT REMOVE – THAT IS THE QUESTION

Mushrooms & Unusual Fungi

Generally, fungal fruiting structures are only a cosmetic problem for those who do not appreciate their presence. The structures can just be left alone; they will eventually dry up and disappear. However, a network of fungal strands (mycelia) remains in soil and mulch even after fruiting bodies disappear or are removed. Mycelia can produce additional fruiting bodies under wet conditions, so mushrooms may ultimately reappear.

Removal of fungal fruiting bodies may be necessary in the following situations:

- Some mushroom species are poisonous and may be removed to prevent possible ingestion by children or pets. Proper identification is required but may be difficult for anyone not trained in mycology. Wear gloves when removing poisonous mushrooms by hand.
- Artillery fungi eject spore masses that stick to cars, houses, and other surfaces. Removal of the mulch containing these fungi, along with a substantial portion of surrounding mulch, is generally desirable to effectively remove the fungal mycelia and prevent repeated damage.

Note: Mushrooms growing at the base of trees, such as *Armillaria mellea*, or those attached to living tissue, such as *Ganoderma applanatum*, may be indicative of a root and crown decay. Contact your county Extension agent for assistance in diagnosing possible root rot diseases.

Slime Molds

Slime molds are harmless and, like fungal saprobes, emerge temporarily during wet weather; growth is halted with the onset of dry weather, and the masses dry up. Dried masses can be removed with a broom or rake, but slime molds may reappear with the return of wet weather. Managing moisture (e.g. irrigation) or improving drainage may help limit or discourage their emergence.

RESOURCES

- Don't Eat Those Wild Mushrooms...unless you know what you are doing! (PPFS-GEN-14, FORFS-16-01)
<https://plantpathology.ca.uky.edu/files/ppfs-gen-14.pdf>
- Shoestring Root Rot – A Cause of Tree and Shrub Decline PPFS-OR-W-06
<https://plantpathology.ca.uky.edu/files/ppfs-or-w-05.pdf>
- Tree Wounds—Invitations to Wood Decay Fungi (PPFS-OR-W-01)
<https://plantpathology.ca.uky.edu/files/ppfs-or-w-01.pdf>

Acknowledgement

The authors thank Kimberly Leonberger, Plant Pathology Extension Associate, for her review of this publication.

June 2020

Photos: Kim Leonberger (1, 4), Nicole Gauthier (2, 5), John Hartman (7), Cheryl Kaiser (8, 9a, 9b), University of Kentucky; University of Georgia CAES Newswire (3); Gary Emberger (6a), George Weigel, PennLive.com (6b); and Megan Kennelly, Kansas State (10)

Revised from the original fact sheet, *Slime Mold, Lichens, and Sooty Mold Problems on Plants (PPFS-MISC-03)* by John Hartman and Brian Eshenaur
