

JOHN'S CORNER

SPRING TIME MULCH

by John Ferguson

Every year about this time we start receiving calls about various things folks are seeing in their mulch. In the spring gardeners start digging in their flowerbeds and start planting. This year we have had a very wet spring which has created some additional items that are harmless but may worry some gardeners.

When digging in a flowerbed, one of the first things a gardener might notice is long white colored stringy substances running all through their mulch. This is a good fungus commonly known as white rot fungus. It typically occurs from 1-3 inches below the surface of the mulch. This fungus helps break down cellulose and lignin releasing the nutrients into the soil and creating the humus that gardeners desire. This fungus is also known to help suppress several types of soil dwelling pathogens. The fungal fibers are normally the size of a human hair as shown in the first photo, however if the soil is very healthy they can sometimes grow quite large as shown in the second photo below (The photo was from a flowerbed at Nature's Way Resources).

The White Rot Fungus (over 1,400 species) that decomposes the dead wood (lignin and cellulose) also has the ability to clean up (digest) chemicals such as: pentachlorophenol (a wood preservative more toxic than CCA), dioxins, cyanides, DDT, TNT (explosive), creosote, and coal tar. This is an extremely beneficial fungus. Bottom line is that this is a good thing to see in one's flower beds. DO NOT kill it off with fungicides as one box store employee recently told a customer. Remember, if you spray your plants with a fungicide, when it rains or the sprinklers come on, the fungicide washes into the ground killing this good guy. Using fungicides now sets one up for soil disease problems later in the year as temperatures warm up.



Another person expressed concern about the grayish specs on some mulch pieces as they were digging in their beds to plant some annual color. Most likely this is a chain forming bacteria called actinomycetes. This is a very good guy as this bacteria eats common fungal pathogens like *Rhizoctonia*, *Pythium*, *Phytophthora*, *Gaeumannomyces* and many more. It is the microbe found in good composts that controls brown patch and other turf diseases. It is also the main ingredient of the biological fungicide called "Actinovate". It may appear in slightly different forms as shown in the photos below. The first photo is from

one of our compost piles and the second in an old dirty mulch pile. This good bacteria is very salt sensitive hence if one uses an artificial fertilizer which are chemical salts then they lose this beneficial bacterial. The result is greatly increased chances of developing Brown Patch, Take-All, and St. Augustine decline.



A third type of fungus that often shows up in spring is called the "Dog Puke Fungus". It grows on the surface of the mulch and may appear in slightly different forms as shown in the photos below. This fungus is more common on mulches that have a high carbon: nitrogen ratio such as barks, dyed mulches, ashen mulches, etc. While it is not dangerous, it can block water and air from entering the soil that can create secondary problems. It can grow into patches over 3 feet in diameter. If this fungus bother you, just take a garden rake and break it up and then blast it with the garden hose.



A forth type of fungus that often occurs in spring is the "Artillery Fungus" known for its ability to shoot spores dozens of feet that stick to walls and other surfaces creating ugly black spots. The artillery fungus (*Sphaerobolus stellatus*) is also known as the shotgun fungus since it can blast its spores 10-15' into the air. These spores are brown to black and very sticky, hence they can discolor light colored surfaces by sticking to them (Bird's nest fungus will also shoot its spores but not as far). If discoloration does occur, a soap and water solution will help to loosen the fungal spores so they can be scrubbed off. There are many species of Artillery fungus however they all look similar to the photo below. The second photo is of the spots and discoloration they cause. This fungus prefers mulches that have a high carbon: nitrogen ratio such as those found in dyed mulches (e.g. red, black, other).





In addition to the above there may be many types of mushrooms and toadstools. These are just the fruiting spores of many of the beneficial fungi. They come in literally thousands of sizes, shapes and colors.





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If one wants to learn more about fungus there is an excellent and fascinating *non-technical* book on the subject:

Mycelium Running, How Mushrooms Can Help Save the World, by Paul Stamets, Ten Speed Press, ISBN 978-1-58008-579-3 This book is a deeper look at fungus and how it affects the world around us from plants to humans. Note: The second edition was recently released.

The appearance of slime molds (another type of fungus) is distasteful to some people, however, the visible signs of this fungus is easily removed by periodically raking the mulch. These types of problems are much more common on mulch made from fresh or woody material liked dyed mulch rather than composted native mulch. They are also are more common in thicker mulch layers (4-6" deep).

Most visible signs of fungus will naturally disappear as the mulch continues to decay into humus.

Another question that came up this week from a customer that found termites in the mulch they had applied a few weeks earlier. Theoretically, all mulches may attract termites but there are many factors to consider. Termites eat the cellulose that is found in wood, both hardwood and softwoods. However, research at LSU has found along the Gulf coast, termites prefer softwoods such as Pine trees as their food source. Termites only eat wood found in dead trees. Since termites require cellulose as a food source we can apply this information to mulches. Cellulose has a very high C:N (carbon: nitrogen) ratio, hence mulches with a high C:N ratio would be more attractive to termites. The dyed mulches (red or black) require dry wood with very high C:N ratio (500:1) for the dyes to stick to them. To make the mulch producers grind up old pallets and construction wood which is most commonly made from Pine trees. Since the termites would have a good food source it would increase ones chances of having a swarm build a nest in their yard.

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Conversely, mulches with a low C:N ratio is not a good food source for termites (compost or composted native mulch). Termites would not be found in the processing piles at a compost/mulch facility. The high temperature of the piles (170°F) would kill any termite as well as the final screening which would tear them apart. What may happen is that during the spring when swarming is occurring, a swarm may move into a pile of mulch to use as a motel to spend the night while they look for a permanent location to build a nest. Termites prefer to nest in the ground close to a food source. This year due to the excessive rain many soils are saturated hence the termites cannot live in them. As a result we are seeing a much higher amount of termite swarming this year than normal.