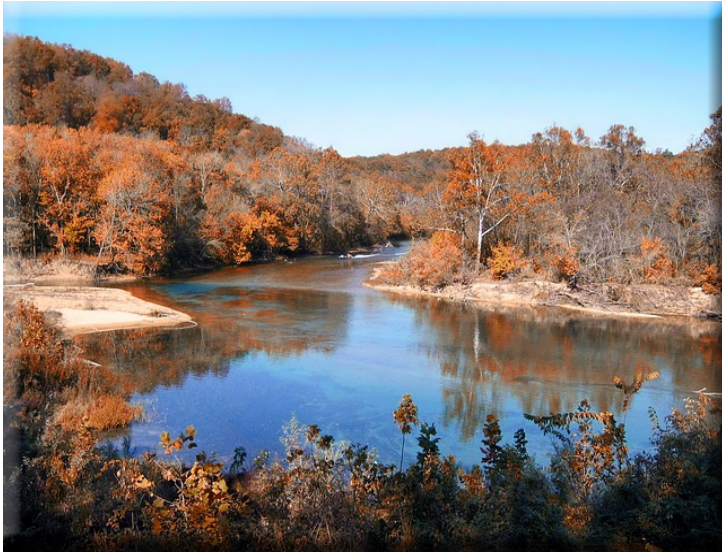


Making a difference in Boone County...

WELCOME FALL!



PLEASE WELCOME LYNNE HOOPER, BOONE COUNTY URBAN HYDROLOGIST!!



Lynne has lived in the Columbia, Missouri area for most of her life. She received a B.A. in English from the University of Missouri in 1987, followed by a J.D. in 1992, also from the University of Missouri. After working in the legal field for many years, Lynne decided to follow her passion, and returned to the University of Missouri in the School of Natural Resources in 2011. Lynne started her new career path with 2 years of undergraduate courses in Fisheries and Wildlife, and then enrolled in the Water Resources Graduate Degree program. Lynne considers herself an eco-hydrologist, combining a strong interest in ecology and ecosystem services with a more fundamental understanding and interest in the physical processes that underly biological systems.

Clean Streets for Clean Water!

In urban areas, stormwater carries phosphorus and other pollutants directly into Missouri's water resources through the storm drainage system.

Unlike our household wastewater, stormwater doesn't go through a treatment plant first, but is dumped directly into lakes, rivers and wetlands. Common pollutants that can wash off our yards and streets include:

Phosphorus: From tree leaves, grass clippings, soil erosion, fertilizer, pet and wildlife waste

Eroding soil: From exposed soil on construction sites, sparse lawns, and unprotected garden beds set close to hard surfaces like streets, sidewalks and driveways

Bacteria: From pet and wildlife waste, and failing septic systems

Toxins: Oil, paint, cleaners, etc. spilled on streets, sidewalks, and driveways or dumped down storm drains

Fall Clean Water Tips

1. Have a storm drain near your home? Act as its guardian angel and do your part to keep it free of litter and leaves.

2. Sweep up grass clippings and fertilizer from driveways, sidewalks, streets, and rake, mulch or compost yard waste.

Don't forget to sweep along the curb. Remove leaves from your gutters, ditches and driveways, sidewalks and streets.

3. Consider using alternative lawn-care techniques in addition to, or even instead of, pesticides. Try these: pulling weeds by hand (counts as a workout), or spot-treating weedy areas instead of your entire yard.

5. Resist the urge to let Fido fend for himself when the weather turns colder, and keep on scooping poop. Pet waste contains phosphorus, nitrogen and harmful bacteria.

6. During routine fall tune-ups, check your car and lawn equipment for leaks. A good rainstorm can send gasoline and oil drips from automobiles, lawnmowers and power equipment into waterways.

Making a difference in Boone County...

Not all mold is bad...

Leaves are a valuable natural resource. Rather than regard them as a nuisance, be grateful that the trees on your property drop a new supply every fall. It takes very little effort on your part to recycle them into a wonderful soil conditioner -- leaf mold -- for the yard and garden. Unlike compost, leaf mold is only partially decomposed, leaving bits and pieces of the leaves visible in the finished product. Leaf-mold is derived only from leaves.

You can make leaf mold the same way nature creates it on the forest floor. Just pile up moist leaves and wait for them to decompose. If you want to speed up the process, you can shred the leaves into smaller pieces before piling them up. Enclose the pile, if you wish, with snow fencing, chicken wire, or something similar to improve its appearance. Make sure the container allows air to circulate because oxygen fuels the decomposition process. Over the winter, the pile will shrink as decay reduces the volume of leaves -- a sign that the process is well under way.

Spread leaf mold on top of bare soil as an organic mulch. It keeps the soil from being compacted by hard rains and drying sunshine. It helps the soil retain moisture by decreasing evaporation, absorbing rain, and reducing wasteful runoff. Leaf mold gradually breaks down in the heat of summer so renew the mulch layer whenever it becomes thin.

Leaves are a valuable natural resource. Leaf mold helps build healthy soil in several ways. When mixed into poor soil, leaf mold improves its texture. The coarse organic material creates air spaces in the soil making it easier for roots and water to penetrate. Leaf mold also improves the soil's ability to absorb moisture and keep it available longer for plant roots. As the leaves continue to decompose they improve the soil's fertility by creating a population of active microbes. Leaves are a favorite food of earthworms, which convert the leaves into nutrient-rich castings that are distributed throughout the soil.

What You Need:

- ☐ Chicken wire
- ☐ Tall stakes
- ☐ Sledge hammer
- ☐ Leaf rack
- ☐ Mulching mower
- ☐ Compost fork
- ☐ Wheelbarrow or garden cart

Instructions

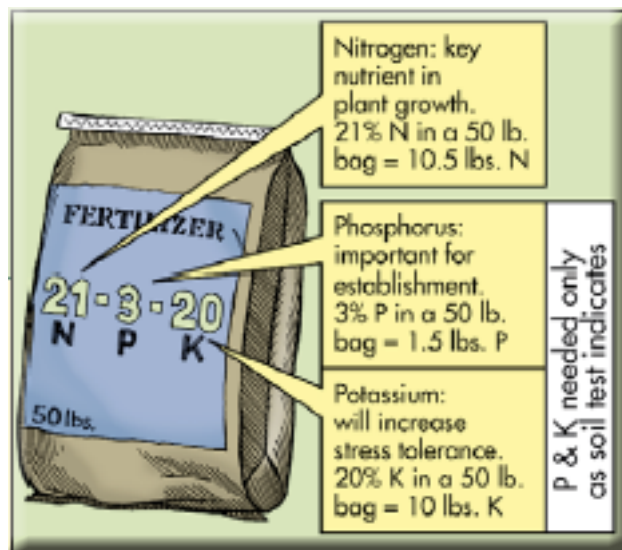
1. Set up a wire cylinder or similar container to hold the accumulated leaves you'll be collecting. (It will help keep the wind from blowing the leaves around.) If necessary, add stakes for stability.
2. The smaller the pieces of organic material, the faster they decompose. Shred leaves by mowing the lawn where they lie with a mulching mower, then raking. Or rake them into a pile and mow over it.
3. Load the shredded leaves into the cylinder. (Those that are damp will decompose faster.) Don't compress the leaves in the container, because good airflow promotes decomposition.
4. When spring comes around, the leaves in the center of the pile will be fairly decomposed and those on the outside less so. As you transfer the leaves to a wheelbarrow or cart, be sure to mix the various layers before you spread them.



Making a difference in Boone County...

Fall is here and it's time to fertilize. Why now?

Taking the time to fertilize in the fall will strengthen your plants' and lawn's roots, giving them a strong base on which to thrive next spring.



The first thing to understand about fertilizer is the formula, which is represented by three numbers, such as the common 5-10-5. The first number represents nitrogen, which promotes lawn blade and foliage growth; the second number stands for phosphorus, which helps root growth; and the third for potassium, which promotes cell function and absorption of trace elements. But what do you fertilize? When? And with what? Let's start with your lawn.

Early in September, grass is recovering from a long hot summer and may be coming out of a drought-induced dormancy so you'll want to give your lawn a shot of nitrogen to push blade growth. A fertilizer with a formula of 20-8-8 will get it growing again. Always follow the manufacturer's recommended rate of application. Some people treat weeds and insects at this time, but unless there are signs of trouble or a history of problems don't apply anything but fertilizer. An application at the end of October or early November is essential. At that time, apply a fertilizer with a formula of 13-25-12. The push of phosphorus will stimulate root growth through November and even into early December. By helping roots grow before winter sets in, you are insuring that the lawn will green-up quicker in the spring and become more resistant to disease and draught.

Fall is also a great time to fertilize shrubs and trees. All trees and shrubs need fertilizer, because most of them are located in mulch beds that use up nitrogen as they decompose. In addition, every fall we rake leaves off these beds, depriving plants of the nutrients that decomposing leaves would traditionally release. To compensate, it is recommended to apply one to three pounds of slow-release nitrogen per 1,000 square feet of bed and cultivating lightly. (To figure out the exact amount of fertilizer you'll need, calculate the square footage of your beds and consult with your local garden center.) I prefer fertilizing trees in late September and early October to promote root growth. These nutrients will still be in the soil come spring when plants start to grow. If you have a tree or shrub that does not flower well, a dose of super phosphate will help promote flower growth.



Fertilizer runoff contributes to nutrient pollution and the harmful toxic algal blooms that frequently occur in the Missouri waterways each summer.

Please Remember:

- *Use fertilizer responsibly.
- *Never apply before heavy rain is expected.
- *Do not fertilize adjacent to waterways.
- *Leave a "ring of responsibility" of approximately 10 feet.
- *Clean up any fertilizer that accidentally spills or falls on the driveways, sidewalks, or roads.

Making a difference in Boone Homes...

Microbeads...Face to Fish

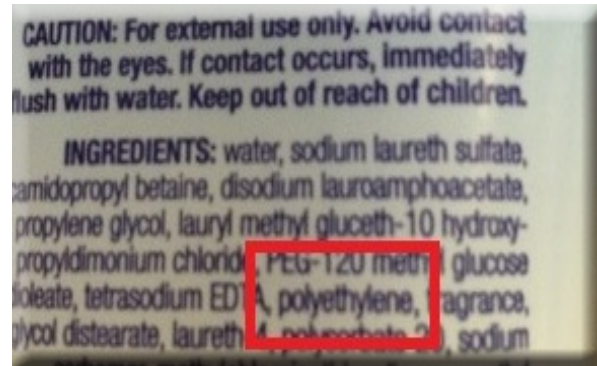
Some time in the 1990s, more and more beauty and cosmetics companies realized that microbeads answered a market demand: Women wanted to have glowing, younger-looking skin, but natural exfoliants used in many products—like ground up apricot or walnut shells—irritated their face. Plastic spheres, on the other hand, could slough off dead skin and dirt without being too harsh that a customer wouldn't want to use it every day. They also could give lotions a creamier, silkier texture and help fill in facial lines. More and more brands began new "gently scrubbing" cleansers, and today, microbeads are ubiquitous on drug store shelves, in hundreds of products.



But all of this innovation also gets washed down the drain, and that's the problem. Because the spheres are too small to be removed in many wastewater treatment plants, they end up in the lakes, oceans, and other waterways. Instead of decomposing, they just float around, and toxins like pesticides and PCBs that already are in the water can cling to their surfaces.

In other words, microbeads act like sponges for toxins already found in local waters and sewage plants. While the beads themselves pose little harm to birds and fish (unlike larger microplastics) they can serve as delivery systems for the other foul pollutants that wind up in our waters, turning from exfoliators to poison pills the longer they freely float.

Eventually, the plastics can wind up in the stomachs of birds and even seafood that humans eat, though the extent that this is happening is not known.



Bioaccumulation

Is the process of organisms accumulating (building up) higher and higher levels of these chemicals and plastics in their bodies.

These chemicals become more concentrated in organisms as we move up a food chain. Animals at the top of the food chain must consume very large amounts of the other organisms and so more and more chemicals become concentrated in their tissues.

Why should we care?

Effects of biomagnification and bioaccumulation on organisms:

- Hard to metabolize => problems in the functions of the organism's organs
- Passed to the next generations, causing mutations and higher death rates

