HORTICULTURAL

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Grass Clippings, Compost and Mulch: Questions and Answers

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Yard waste, such as grass clippings, leaves and branches, was banned from Missouri landfills in 1992. These materials are a valuable landscape resource when composted or used as a mulch. Grass clippings do not need to be collected and can actually benefit the turf by returning nutrients and organic matter to the soil.

This publication answers many of the most commonly asked questions about composting, mulching, and not collecting grass clippings. For further information, please consult the following MU publications: G 6956, *Making and Using Compost*; G 6960, *Mulches*; and G 6957, *How to Build a Compost Bin*.

Grass clippings

What is the "Don't Bag It" lawn care plan?

This University Outreach and Extension educational program involves recycling grass clippings. Instead of collecting clippings, the "Don't Bag It" plan encourages people to return them to the lawn.

What benefits do grass clippings provide if returned to the lawn?

Grass clippings returned to the lawn provide up to 25 percent of your lawn's total fertilizer needs. Clippings contain about 4 percent nitrogen, 2 percent potassium and 1 percent phosphorus. While decomposing, they also serve indirectly as a food source for the bacteria in the soil, which are doing many beneficial things (such as decomposing thatch) for a healthy turf environment.

Do my mowing practices need to be changed to follow the "Don't Bag It" plan?

Regular mowing with a sharp blade is essential for reducing the need to collect clippings. Grass must be mowed often enough so that no more than a third (about 1 inch) of the vertical grass height is removed with each cutting. Figure 1 shows recommended cutting heights.

"Don't Bag It" does not mean you should leave an excessive amount of clippings piled on the lawn surface after you mow. Leaving too many clippings will damage the lawn.

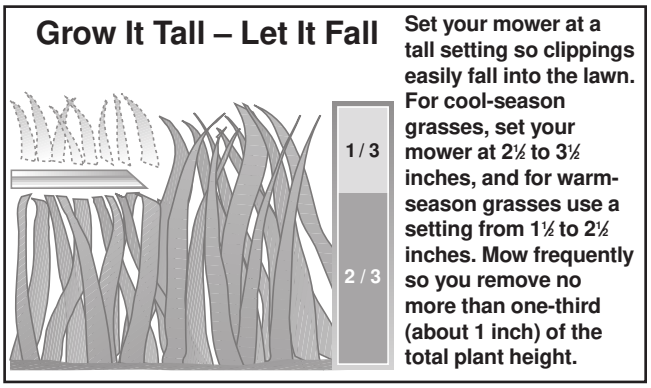

Figure 1. Grass should be mowed tall and clippings should be returned to the lawn to produce a healthy lawn.

Returning clippings to the lawn usually means having to mow more than once a week during the few weeks of rapid growth during the spring and early summer. Mowing more frequently is not as much work as it may appear, because lawns mowed at the proper height cut more easily and quickly. As lawn growth slows in the summer, grass can be mowed less often.

Why recommend taller mowing heights?

When you set your mower at a higher cutting height, the grass plant produces a deep and efficient root system that can reduce the need for watering (see Figure 2). Taller mowing also helps to "shade out" many weeds. Simply remember to set your mower at a tall setting so clippings fall easily into the lawn.

Do clippings returned to the lawn contribute to thatch problems?

Thatch is a layer of undecomposed or partially decomposed grass roots, stems, crowns, runners and lower shoots that accumulate between the soil surface and actively growing turf. Grass clippings contain 80 to 85 percent water and decompose much more quickly than other grass plant parts. Research at MU and other universitites indicates that clippings do not contribute to thatch buildup on any cool- or warm-season grasses, including zoysiagrass.

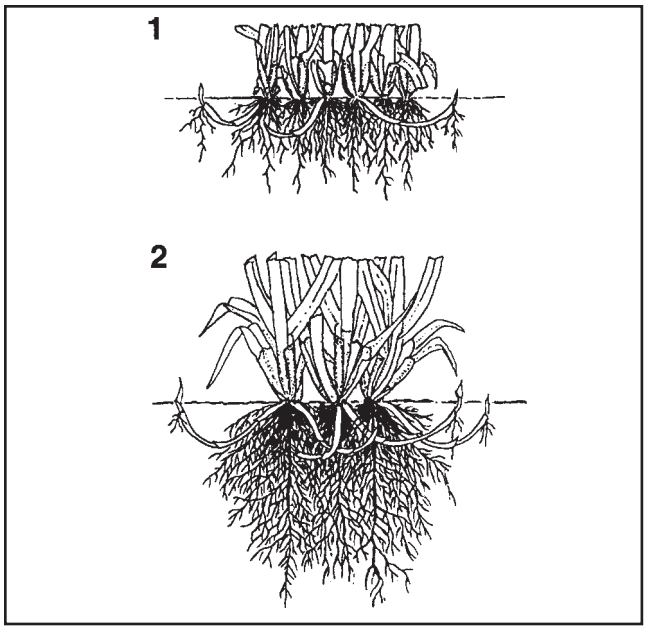

Figure 2. A comparison of turfgrass mowed at two heights. The closer-mowed turfgrass (1) has fewer roots and uses water inefficiently. The higher-mowed turfgrass (2) has a more extensive root system and is more drought resistant.

Before you start returning clippings to your lawn, make sure the thatch layer is no more than ½ inch thick. A layer more than ½ inch thick will prevent clippings from coming into contact with soil microorganisms. If thatch is a problem in your lawn, use a vertical lawn mower or power rake to reduce the thatch layer. Use the thatch as a mulch or add it to your compost pile. For more information on thatch, refer to MU publication G 6708, *Thatch — Enemy of Lawns.*

Can my mower's bagging attachment be removed safely?

Be cautious about removing the bagging attachment from any lawn mower. Because many mower bagging attachments affect safety, it is very important to understand manufacturer guidelines before you consider removing the attachment. Some manufacturers have adapter or converter kits that can be purchased to change from a bagging mower to non-bagging type. Remember, never assume your mower is still safe to operate after removing the bagging attachment. Refer to your owner's manual or equipment dealer.

Are mulching mowers any more effective than regular lawn mowers?

Mulching mowers are rotary mowers that cut clippings into smaller pieces and disperse them uniformly back into the lawn for decomposition. Removing only a third of the vertical green growth is very important when using a mulching type of mower. Well-designed mulching mowers distribute clippings more evenly across the lawn surface than regular lawn mowers.

How does lawn fertilizing affect clipping production?

This question will be answered in two parts, beginning with the cool-season grasses (Kentucky bluegrass, tall fescue and perennial ryegrass) and then the warm-season grasses (zoysiagrass and bermudagrass). Cool-season grasses should be fertilized primarily in late summer and fall (September-October). Nutrients applied at this time encourage root growth and turf thickening. Fall applications also result in early spring green-up without causing excessive leafy top growth.

Given proper fall fertilization, spring applications may not be required. High rates of nitrogen (more than 1 pound per 1,000 square feet) in the spring will stimulate unnecessary flushes of leaf growth and may predispose the lawn to greater summer damage. No more than one spring fertilization should occur. This can be in late March or early April with a weed-and-feed treatment for crabgrass or in May with a slow-release nitrogen source.

Warm-season grasses should be fertilized when the grass begins its active growth in late spring and early summer (May-June). Again, for slow and even growth, use a fertilizer containing a slow-release nitrogen source. Warm-season grasses should not be fertilized in September and October.

Are there any situations when I should collect the clippings from my lawn?

- When the lawn is heavily diseased, removing clippings can help to decrease the population level of disease organisms. Clippings can still be used for compost.
- If the lawn must be mowed when wet or excessively tall, clippings will mat together and may not be evenly distributed. The lawn may be damaged under clumps of clippings.
- If your mower is unsafe to operate without a bagging attachment, clippings can be collected. Use the clippings as a mulch or for compost.

If clippings are collected, can they be used for mulch or in a compost pile?

Yes, grass clippings used as a mulch should be built up gradually to a 1-inch layer using dry grass. Greater thickness can inhibit the penetration of moisture and oxygen into the soil, and excessive heat and foul odors may develop. Mulching thickness can be increased by mixing in a 1:1 or 2:1 ratio of compost, dry leaves or wood chips with fresh grass clippings.

Grass clippings also can be used in a compost pile. The additional nitrogen grass clippings supply will help speed up the microbial process. However, large amounts of fresh clippings, all at one time, can create odor problems. These temporary odors can be reduced by mixing compost, dry leaves or wood chips in a 1:1 or 2:1 ratio with clippings before composting.

Composting

What is composting?

Composting is the process of breaking down plant materials such as leaves and grass clippings to a more usable organic soil amendment or mulch. Composting yard, garden, and some food wastes creates a valuable soil amendment.

Compost improves the drainage and aeration of heavy clay soils and increases the moisture-holding ability of sandy soils. Adding compost to soil increases earthworm and soil microbial activity that benefits plant growth. With yearly additions of compost, a more desirable soil structure is created, and the soil becomes easier to work. Compost also contains nutrients needed for plant growth.

A well-managed compost pile with shredded materials under warm conditions usually will be ready in one to four months. But if a pile or bin is left unattended and material is not shredded, the pile may take a year or longer to decompose.

What materials can be composted?

Yard residues and other organic materials are suitable for composting. These maerials include leaves, grass clippings, straw, hay, sawdust, vegetable and fruit trimmings, coffee grounds and wood chips. While grass clippings can be composted, they are more beneficial if left on the lawn. If clippings are composted, they should be mixed with other yard wastes or soil to aid in decomposition and reduce odors.

What kinds of materials should not be put into the compost pile?

Human, dog and cat feces should not be placed in compost piles because of the possibility of disease transmission. Meat scraps, bones, grease, whole eggs and dairy products also should not be added to compost piles because they can attract rodents. Diseased plant material or weeds that have gone to seed may be undesirable in a compost pile. If temperatures in the pile do not go high enough (140 degrees), neither the seeds nor the disease organisms will be destroyed.

Can clippings or other yard wastes treated with pesticides be put in the compost pile?

No simple answer exists to this question. Individual pesticides react in different ways and break down under unique conditions. Research is being conducted to better evaluate the fate of pesticide products once applied to turf areas. Lawn clippings treated with a herbicide (weed killer) should be returned to the lawn for two or three mowings after the application before using them in a compost pile. Herbicides commonly used on home lawns persist in the soil from less than one month up to 12 months, depending on the chemical. If some treated clippings are mixed into a compost pile, they will decompose more rapidly in a properly maintained pile than in soil.

In general, plant material in contact with insecticides registered for home use is safe to use in a compost pile. Insecticides sprayed on plant material break down rapidly in light, and the plant material usually can be used in the compost pile within one week of application. Fungicide-treated material should also be kept out of the compost pile for at least one week.

Can wood ashes and barbeque ash be used in the compost pile?

Wood ashes act as a lime source, and if added to compost should be used only in small amounts (no more than 1 cup per bushel of compost). As with adding regular lime, excessive amounts of wood ashes result in loss of nitrogen from the pile. Charcoal is just a partially burned form of wood. So long as no other chemicals have been added (check labels on packaging to be sure) barbeque ash should be a safe compost addition.

How can unpleasant compost pile odors be avoided?

Odors may arise from adding too much wet material such as grass clippings or fruits, from overwatering the pile or by not periodically turning an actively decomposing pile. A properly prepared and adequately turned pile generates little or no objectionable odor. Keeping compost as moist as a wrung out sponge but not waterlogged prevents unpleasant odors. Adding lime does not necessarily reduce odors and may result in the loss of nitrogen from the pile. Excessive lime may make the compost too alkaline. Incorporating high-pH compost into soil may reduce availability of micronutrients such as iron.

What are carbon-to-nitrogen ratios?

The microorganisms in compost use carbon for an energy source and nitrogen to make proteins. The proportion of these two elements used by the microorganisms should be about 30 parts carbon to 1 part nitrogen by weight. Given a steady diet at this 30:1 ratio, microorganisms can decompose organic materials quickly. For instance, sawdust has a high C:N ratio (100–500:1) and decomposes fairly slowly unless some additional nitrogen is supplied. Grass clippings have a relatively low C:N ratio (12–25:1) and decompose relatively quickly.

A general rule of thumb for a good C:N balance is to mix roughly equal weights of fresh green material (grass clippings, weeds) and dried brown wastes (leaves, straw, wood chips, dead plants) or use a 2:1 ratio of dried brown wastes to fresh green material. Blending of materials to achieve a workable C:N ratio is part of the art of composting.

Should compost piles be covered?

A compost pile with a good moisture content will benefit from being covered with plastic or carpet scraps. Covering helps to keep piles moist in summer and prevents them from getting too soggy in winter. However, if a pile is too dry or soggy to start with, covering may make the problem worse.

Mulching

What does mulch do?

Mulches such as wood chips, leaves and compost suppress weeds, conserve soil moisture and modify soil temperatures. Mulch also protects sloping ground from soil erosion and can stop soil compaction caused by driving rain. In addition, mulch provides a good environment for earthworms and other soil organisms that are necessary for healthy soil. Mulches can reduce maintenance as well as provide a feature of your landscape.

Can walnut hulls be used for mulch?

The hulls from black walnut contain a chemical plant inhibitor (juglone) that can restrict the growth of some plants such as tomatoes and cabbage. Compost the hulls for about three months before using them as a mulch. Partial decomposition of the hulls will oxidize the juglone, making them safe to use on plants.

Will mulching with wood chips or sawdust rob nitrogen from plants?

Carbon-rich woody wastes will not compete with plants for nitrogen if they are placed on the soil surface around plants. However, these materials should not be mixed into soil without extra nitrogen fertilizer (see MU publication G 6955, *Improving Lawn and Landscape Soils*). Use wood chips and sawdust to mulch trees and shrubs where the soil is not tilled and the mulch stays on the surface. Sawdust is safest to use as a mulch if it is not fresh and has had six months to a year to age.

Can oak leaves be used as a mulch?

Yes. An old myth exists that oak leaves are too acidic for most plants. Acid content is not a major concern with mulches. Remember, a mulch is used on top of the soil and pH is measured in the soil. Although oak leaves do contain tannins, the tannins do not affect the growth of the mulched plants.

How deep should a mulch be applied around my trees and shrubs?

Most mulches should be only 2 to 4 inches deep. Air and water exchange are dramatically reduced and the soil becomes an inhospitable environment for roots if the mulch is applied too deeply. Do not apply mulch right up to the trunk or stem of a tree or shrub as this encourages the development of decay fungi.

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