



Grass Clippings and Composting:

A Guide to Landowner Best Practices

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According to Indiana's Department of Environmental Management, yard waste can represent as much as 50% of solid waste during the growing season and about 10% over the course of the year. Estimates are that 1 ton of clippings may be generated from a 5,000 square feet lawn (Lerner, 2002).

The issue of grass clippings creates two separate issues: one, the unnecessary over-abundance of organic waste adding to landfills; two, the chemical load applied to grasses that enter the waterways through storm drains.

Excessive fertilizer and pesticides are increasingly more evident in our waterways. Due to this impact, communities are seeking better ways to sequester, re-use or reduce the sources of contamination. The sources vary but a prominent one is from the clippings from lawns in the urban/suburban spaces with active storm drains.

Storm drains are a necessary part of the design and infrastructure necessary for modern living in a dense environment. As these drains perform their function, keeping land well-drained and livable for families and businesses, they also create a direct pipeline to the rivers with little or no chance of filtering or cleaning. Of all the practices discussed for the proper place for grass clippings, the storm drain is not, nor should be, considered an option.

The simplest and best solution to reducing contamination is by knowing the proper amount, directions and the right conditions for application. That being said, the focus of this paper is to address the potential of contamination through the improper disposal of clippings and the preferred practices to prevent contamination.

More communities are restricting lawn by-products from traditional waste disposal and the average homeowner wonders what to do with their clippings.

Issues

As landowners prepare their properties for the coming Spring/Summer/Fall growing seasons, they often place fertilizers and pesticides on the lawn. In an effort to maximize the potential for the preferable appearance of their lawns, these chemicals are too often over-applied.

Over-application may not be evident on the turf itself until far too much has caused the grass to "burn" with the chemical load. Too much of a pesticide or nutrient may not be evident but still be present as lawns are cut or as the next rainfall washes over the landscape. In either case, the end result is the same-the residual load will be washed down the nearest storm drain and out to the waterways and lakes. These clippings and the soil in the sheet runoff carry into the storm drains and add pesticides, fertilizer and sediment to the rivers, lakes and streams.

Once these clippings reach the waterway, they start breaking down and the chemical is released from its bond to the plant. The chemicals then become available to other plant life (US EPA,). Unfortunately, the organisms in and along the waterways do not need the added loads of sediment and compounds.

More specifically, the chemicals of concern are phosphorus and nitrogen. These common ingredients in fertilizers are considered the limiting factors in the growth of unfavorable algae. This is to say that of all the factors that impact the growth of algae, the amounts of available phosphorus and nitrogen determine its ability to grow (Braig, 2011).

In fact, the accelerated plant life has typically been the non-preferable species. In recent years, the available phosphorus loads have been attributed to the virulent and profuse Blue-green algae in rivers, lakes and streams. Many of the organisms benefiting from the excessive nutrient load are considered as Harmful Algal Blooms (HABs) and pose a potentially serious health threat.

The health threats HABs create are both direct and indirect. Directly, HABs can cause serious risk to health of animals, including humans, through toxins impacting the liver, nerves and/or skin. Indirectly, every community that draws drinking water from surface waters containing these algae must filter and specifically purify that water to screen these toxins out (Braig, 2011). Both of these threats have real economic impact on recreation, commerce and the general health and attractiveness of the community.

Strategies

Traditional method: On many lawns, cut grass is collected and then put in bags for disposal. Special paper bags, designed to degrade, are sold at various stores and are used to dispose of the yard “waste” through more traditional methods via the refuse company pick-up. These trimmings may get diverted for use elsewhere in the landfill facility but quite often get mixed in with the other refuse and result in literally wasting the benefits of this potentially beneficial mixture.

Bio-solids: The better place for clippings being removed from your yard, if composting or mulching is not an option, is to take them to a bio-solids/composting facility. These facilities introduce a wide variety of organic matter into the compost and create a marketable, medium-quality end product for landowners. The benefit of these sites is that they do the work for you and have a wider range of matter to create the compost. Furthermore, the professionals know how to manage the piles. See the addendum for information on the locations of local bio-solid facilities.

Mulching: One of the biggest myths about thatch being caused by clippings has been disproven. Thatch is the result of old stems and roots (University of Missouri, 2003; Colorado State University, 2004). Where excessive thatch is undesirable, clippings break down quickly and contribute to the health of the soil through naturally-occurring nutrients, organic material and water. There are estimates that for every 200 pounds of clippings, 150 pounds of that is water (Colorado State University, 2004).

Another benefit to mulching is the decrease in time spent on the lawn. Studies have demonstrated there is less time in mowing more frequently than is put into weekly mowing and grass collection (Colorado State University, 2004).

At any rate, the rule for mulching is to grow the grass to about three inches and then remove only the top inch. This makes for a better, thicker lawn, ideal clipping sizes and also helps to keep the soil moist and regulate weeds (University of Missouri, 2003; Colorado State University, 2004).

Home Composting: Another technique would be to collect the trimmings and place them into a compost heap. Composting uses the natural breakdown of organic material to create carbon and nitrogen-rich amendments to soil. Getting a start with composting involves using various by-products around the average home or business and setting them into an environment where the natural breakdown cycle is accelerated by the presence of air, moisture, and insects and, to some degree, heat. The main benefit to compost as a soil amendment is that it helps to increase the aeration and water-holding capacity of soil while assisting in the nutrient exchange (Lerner, 2002).

The presence of bugs is typically a good sign of proper composting. Certain bugs are better to see than others but the general presence of them helps to further break down lawn material (University of Illinois, no date).

Vermicompost: Using worms in this version of composting creates a potentially richer soil faster than regular composting (Purdue University, 2008). The worms digest much of the content and accelerate the break-down of material. What is left behind the worm in the form of its excretion is called a “casting” and is rich in nutrients and minerals. These castings create a bond to the soil, making it more cohesive while maintaining a high rate of permeability (University of Illinois, no date). The net effect of this phenomenon creates a situation where rainfall may be thoroughly soaked into the soil while retaining soil integrity-this reduces the risk of erosion.

The biology of the worm is the key to the benefit of composting with worms. As the worms eat the scraps and waste, rich in nutrients, they digest it. What isn't absorbed by the worm is passed through to create a very condensed, nutrient-rich by-product (Cornell University, 1996).

Caveat

If a landowner chooses to build and use a compost pile, it needs to be placed away from streams, drains and waterways. Any runoff or flooding can lead to contamination, via the leachate, from the contents of the compost heap (US EPA, 2012).

Conclusion

There are many different methods of handling the clippings from our lawns. The factors in considering which strategy is best depends on the situation, scale, facilities and amount of time a landowner wants to spend on their lawn care.

Consistency is also an issue. In a case where Seattle actively encouraged landowners to cease the use of pesticides and herbicides to preserve the Chinook salmon population, the use of these continued with municipal crews. After public criticism of a “do-as-we-say-not-as-we-do” policy, the crews of King County and the City of Seattle voluntarily phased out all Tier 1 chemicals; opting instead for safer alternatives (Johnson, 1999). The US EPA also cites the need for consistency in municipal policy (US EPA, 2012).

While all of the practices reduce the amount of chemicals and sediment, they are not equal. The benefit of each practice seems to be fairly well with the amount of energy a landowner is willing to expend.

Mulching is the most economical in energy and time but does not create the beneficial return of collection and composting. Bio-solid facilities do the composting instead of the landowner but still require collection, fuel costs, time and even a small fee. Composting in the traditional sense is fairly low-maintenance but does not have the richer by-product of vermicomposting. The only anomaly in any of these practices is collecting grass clippings and putting them into the landfill-based waste stream. The latter practice involves a high degree of energy with little or no beneficial return. This practice may even require additional cost, time and energy in purchasing amendments and auxiliary chemicals to gain a similar effect of the other practices.

Addendum

The City of Fort Wayne Bio-solids Handling Facility is located at 6202 Lake Ave. Ft. Wayne, IN 46815. Telephone number is 260-749-8040

National Serv-All Inc. operates a composting facility at 6231 Macbeth Rd., Ft. Wayne, IN 46809. Telephone number is 260-747-4117

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