BEST MANAGEMENT PRACTICES FOR HORTICULTURE AND LANDSCAPE FERTILIZER APPLICATION

Fertilizers are used to deliver nutrients (e.g., nitrogen, phosphorus and potassium) to plants in a way that is easy for their roots to consume. They are typically applied to soil with newly planted seed but can be applied throughout the life of the plant to sustain health. However, it is possible to apply too much.

When too much fertilizer is applied to a lawn, garden or field, the excess is picked up in water runoff that flows down ditches and drains, and into waterbodies, creating conditions leading to harmful algal blooms (HABs). All types of fertilizer can contribute to HABs, whether synthetic products, or derivatives of manure or bone meal. Excess fertilizer can have unintended harmful effects on terrestrial and aquatic plants and animals, and can end up in soil, water and air.

FERTILIZER IMPACTS TO WATER AND HABS

When excess nutrients from fertilizer enter into bodies of water, they provide fuel for toxic algae to grow out of control. Nutrient enrichment, primarily phosphorus and nitrogen, is also known as eutrophication. Toxic algae are harmful to human and animal health when consumed or through contact with the skin. Additionally, dying blooms will deplete the supply of oxygen in the water as they decompose and the low-oxygen levels threaten both survival and reproduction of aquatic life. While fertilizers containing phosphorus and nitrogen can facilitate occurrence of cyanobacteria if not properly used or disposed, nitrogen compounds can also convert to nitrates, which dissolve easily in water and contaminate ground water supplies beyond safe drinking-water levels.

HABs are difficult to eliminate once they take hold, and no antidote or cure exists in cases of algal poisoning. Prevention of HABs is the best protection for environmental health as well as health of humans and animals. SBEAP’s HAB toolkit at https://www.sbeap.org/water-quality/harmful-algal-blooms provides information on HABs and a list of laboratories to send water samples for testing and analysis. Instructions are also included for conducting an at-home “jar test” as well as best management practices to mitigate HABs.

LAWN CARE AND FERTILIZATION BEST MANAGEMENT PRACTICES

Due to the toxic nature of HABs, it is important to properly manage use of fertilizers to prevent conditions that cause algal blooms. The following are best management practices to employ when using any fertilizers:

- Conduct a soil test before applying fertilizer to determine what nutrients and quantities are needed.
- Avoid application over impervious surfaces such as sidewalks or patios; sweep any excess fertilizer onto the grass to prevent it from washing away.
- Apply during calm dry weather.
- Do not apply to bare or eroding soil.
- Do not apply near water unless the product is designed for such use.
- Do not apply near wells.
- Use fertilizers appropriately and sparingly.
- Begin lawn fertilization programs in the fall season (cool-season turf).
FERTILIZER ALTERNATIVES

Alternative fertilizers are a great way to introduce necessary nutrients to plants that need it while also limiting negative impacts fertilizers can have. Chemical fertilizer alternatives and their benefits include the following:

**Organic fertilizer**
- Contains lower concentrations of nutrients with a slower release (to be applied with respect to the nutrient needed)
- Utilizes recycled waste

**Grass clippings**
- Adds nitrogen and organic material to the soil
- When left through the season equals one fertilizer application and does not cause thatch

**Aeration**
- Creates holes to allow air, water and nutrients to reach roots.
- Best done in early fall is the best time to aerate (cool-season turf)

**Compost**
- Provides soil organics and improves water-retention properties for dry periods
- Utilizes recycled waste

**Soybean meal fertilizer**
- Phosphorus-free and performs equal or better than chemical fertilizers
- Harmless to people, pets and other plant material

PREVENTING EUTROPHICATION

Because of dangers HABs pose and the difficulty in eliminating them, the main priority should be prevention. Employing best management practices in this factsheet is a great first step in limiting a major driver of algal blooms although layers of protection can also be added around water bodies.

The best measure available to prevent HABs from taking over waterbodies is to increase plant life in and around the area. Increasing the number of aquatic plants will help to absorb any nutrients in the water and prevent their excessive accumulation. Adding a buffer zone of plants around the water’s edge will absorb nutrients from water runoff and prevent them from entering the water.

It is important to note that any new plant species introduced in or around the water should be both non-invasive and native to the area. Native plant species will survive more extreme climate conditions, and do not require fertilizers or supplemental watering. They will also develop healthier root systems that will improve filtration of water runoff.

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1. https://toledolakeerie.clearchoicescleanwater.org/lawns/fertilizer-impacts
5. https://newcropsorganics.ces.ncsu.edu/organics/soybean-meal-fertilizer/