



Turf Tips

For the Homeowner



Phosphorus and Home Lawns

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One of the primary contaminants of surface water in Michigan is phosphorus. The contribution of phosphorus from urban landscapes has been identified as a significant input for many watersheds in Lower Michigan including the Kalamazoo River, Grand River, Huron River, Clinton River, and River Rouge. Reducing the loading of phosphorus from urban landscapes is a major concern for local communities as they strive to meet federally mandated water quality standards. Decision makers are using various computer models in an attempt to estimate which activities or land uses are adding phosphorus to surface waters. Phosphorus movement from urban landscapes can be attributed to several sources including the physical movement of soil or organic debris (tree leaves, grass clippings, animal waste), the leaching or runoff of phosphorus from the soil, and direct movement of phosphorus from fertilizer that is applied to impervious surfaces. Phosphorus movement that is not attributed to a specific activity or land use is often attributed to home lawn fertilizer applications.

Phosphorus Applications

Phosphorus is an essential nutrient for plant growth and is routinely used as part of fertilization programs on home lawns. Home lawn fertilizer applications are primarily based on the application of nitrogen while phosphorus in most cases is applied based on the pre-determined ratio of nitrogen to phosphorus. It is common for phosphorus to be applied as a casual compliment for nitrogen rather than using a soil test to judge

phosphorus requirements. As a result, phosphorus is often applied when a soil test would recommend no application.

Throughout many areas of Michigan, home lawns are grown on phosphorus rich soils and therefore do not require phosphorus fertilizer applications to maintain a healthy turf. Soil testing should be used to determine phosphorus needs for home lawns and when soils test high for phosphorus, zero phosphorus fertilizers should be applied. Care should always be taken when applying fertilizers to keep fertilizer particles on the turf, if particles end up on sidewalks or streets take the time to sweep them back into the turf. Fertilizer applications near surface water should be avoided, maintain a 5 - 10 foot buffer strip where fertilizer applications are avoided so as to minimize the potential for any direct application of fertilizer to the water.

Selecting a Fertilizer

The fertilizer analysis refers to the percentage by weight of nutrients in a bag of fertilizer. The analysis is listed on the bag, usually on the front of the package. The first number represents nitrogen, the second represents phosphorus (expressed as P_2O_5), and the third represents potassium (expressed as K_2O).

Sample analysis: 20(N)– 5(P_2O_5)–10 (K_2O)

Due to water quality concerns over phosphorus concentrations in surface waters, many communities have instituted partial or complete bans on applying phosphorus-containing fertilizers to home lawns. Phosphorus ordinances may result

in confusion for the homeowner as they try to select fertilizer products for home lawns. Generally, it is difficult to buy zero phosphorus fertilizers from retail outlets. Often the only fertilizers that are available that satisfy the zero phosphorus requirement, are fast release nitrogen fertilizers such as urea (46-0-0). Fast release nitrogen fertilizers such as urea can be very effective fertilizers when used properly. However, for homeowners, using these products may not be the best choice. Fast release nitrogen fertilizers are readily soluble in water and have potential to leach to ground water, especially if applied at high rates. Other potential problems with applying fast release fertilizers are that they produce excessive amounts of top-growth, often at the expense of root growth. Fast release fertilizers also have the potential for burning turfgrass when applied at high rates, at high temperatures, or when they are not watered in. For most homeowners, using fast release nitrogen fertilizers for lawn fertilization is not recommended.

Another option that is often considered when phosphorus fertilizer reduction is being considered is to use a percentage value to determine whether or not a particular fertilizer is acceptable. For example, the local township determines that 3% phosphorus (P_2O_5) by weight in the fertilizer bag is an acceptable percentage for reducing the amount of phosphorus applied to lawns. Following this guideline, fertilizers with nitrogen to phosphorus ratios of 28:3 and 4:3 would both be acceptable. Fertilizer applications to home lawns are usually

based on applying approximately 1 lb. N/1000 ft.². Based on the 1 lb. N/1000 ft.² application if the 28:3 fertilizer is used, there would be 0.05 lbs. phosphorus/1000 ft.² applied. If the 4:3 fertilizer is used, there would be 0.33 lbs. phosphorus/1000 ft.² applied. Establishing a guideline for selecting fertilizers based on the percent of phosphorus contained in the fertilizer will not necessarily result in reducing the amount of phosphorus applied to home lawns.

An alternative to zero phosphorus or percentage based fertilizer recommendations, is to use nitrogen to phosphorus ratios. For example, the local township decides that a 5:1 ratio of nitrogen to phosphorus is an acceptable ratio to reduce phosphorus fertilizer applications. Using this guideline the 28:3 fertilizer would be acceptable but the 4:3 fertilizer would not. Ratio guidelines are preferred to using percentages to determine the acceptability of a particular fertilizer, however it is still difficult to determine what the appropriate ratio should be.

Phosphorus Fertilization Tips

1. Soil test to determine if phosphorus applications are necessary
2. Keep fertilizer particles on the turf, if particles end up on sidewalks or streets take the time to sweep them back into the turf
3. Maintain a 5-10 foot buffer strip around surface waters to avoid direct application of fertilizers to the water



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