

It's All About Your Soil

An ideal soil has 25% air, 25% water, 45% mineral particles, and 5% organic matter. This 5% organic material/matter is composed of 10% organisms, 10% roots, and 80% humus.

The 45% mineral particles (dirt) are composed of sand, silt, and clay particles (stones). Roots have no ability to get nutrients from stone. It relies on bacteria producing acids that break up the stone to release minerals.

You want to have a soil that is alive with living microorganisms that creates a thriving soil organic ecosystem.

YOU DO NOT HAVE THIS IN BATH..., SO YOU WANT TO START TO CREATE A LIVING SOIL ENVIRONMENT

Organic Material versus Organic Matter

Organic material was alive but is now in the soil. It is the raw material of decomposition and is unstable.

Micro-organisms (fungi and bacteria) breakdown organic matter and releases nutrients for your plants (your grass) turning it into humus.

Humus integrates into the permanent structure of the soil, thereby improving it by creating air spaces and water holding capacity.

Each % of organic material in your soil releases 20-30 lbs nitrogen (N), 4.5-6.6 lbs phosphorus (P), and 2-3 lbs of sulfur (S).

There are 17 nutrients essential for all plant life, but 3 macro nutrients are the most important. These are..,

Nitrogen (N): causes vigorous and leafy growth

Phosphorus (P): causes strong roots and helps the plant use other nutrients more efficiently

Potassium (K): regulates overall growth and helps the plant use water & resist drought

How to begin to create a living soil environment for your lawn.

- 1) Mulch don't bag your grass clippings when you cut your lawn. Exceptions: dandelions and crabgrass have gone to seed. Clippings are 80-85% water and the balance organic material. They protect the crowns of the plant and reduce evaporation (think less watering). Use the 1/3 rule of cutting.
- 2) Organic fertilizers rather than synthetic chemical fertilizers.
- 3) Add soil amendments like compost (ideally certified weed free) annually.
- 4) Aeration (maybe) brings up the lower-level soil to the surface to breakdown and be introduced to living microorganisms, reduce compaction and add oxygen to the soil.

*Sidenote: Do grass clippings cause thatch buildup? Research has shown that grass roots are the primary cause of thatch, not grass clippings. Thatch is composed primarily of roots, stems, rhizomes, and other plant materials. These plant materials contain large amounts of lignin (fibrous material) and decompose slowly. Grass clippings are approximately 80-85 percent water with only small amounts of lignin and decompose rapidly. (University of Nebraska)

Cation Exchange Capacity (CEC): total negative charge of soil or how many cations a soil can hold. The negative charges (generally from clay and organic matter) that allow positive charged particles (calcium, potassium, magnesium, and ammonium nitrogen) to stick together. More are better.

Light colored sands have 3-5 milliequivalents per 100 grams of soil whereas organic soils have 50-100 (wow)!

pH values: pH values range from 1-14 on a pH scale which is logarithmic (7 neutral, <7 acidic, >7 alkaline). pH 6-7.5 is a good range for lawns. To raise your pH, add limes and dolomites (low in magnesium). To lower your pH, add sulphates (like ammonium sulphates). Organic material helps the pH move towards neutral.

-Very acidic soils mean that nitrogen, phosphorus, potassium, sulfur, calcium, magnesium, molybdenum has difficulty being utilized by the plant.

-Very alkaline soils mean that iron, manganese, boron, copper zinc has difficulty being utilized by the plant.

Organic Lawn Care

Organic lawn care focuses on the soil media. *Simply put if the soil is healthy, alive with living microorganisms and has a high organic content, then the plants growing in it will also be healthy, disease & drought resistant, able to crowd out weeds, and be able to withstand higher insect populations.* This is the goal of organic lawn care. The problem is that almost all Kingston lawns are far from this condition. Pesticide programs in the past simply focused on correcting a problem (weeds & insects) that was a consequence of the poor growing conditions. This did not correct the source of the problem, which was the soil. Why? The short answer is pesticides and synthetic chemical fertilizers are cheap with somewhat quicker results. As a society, we generally are unwilling to wait for results - we want it now. Continuing to use synthetic chemical fertilizers will not address the underlying problems and you will probably get discouraged & give up on lawn care. **With organic lawn care we want to continually improve the soil (over the long term) by using organic fertilizers and compost.** Over the years, the goal is to create the ideal soil and the lawn will naturally continue to improve. For nearly 30 years Enviro Masters Lawn Care has used organic fertilizers which is environmentally responsible.

The Organic Fertilizer Advantage

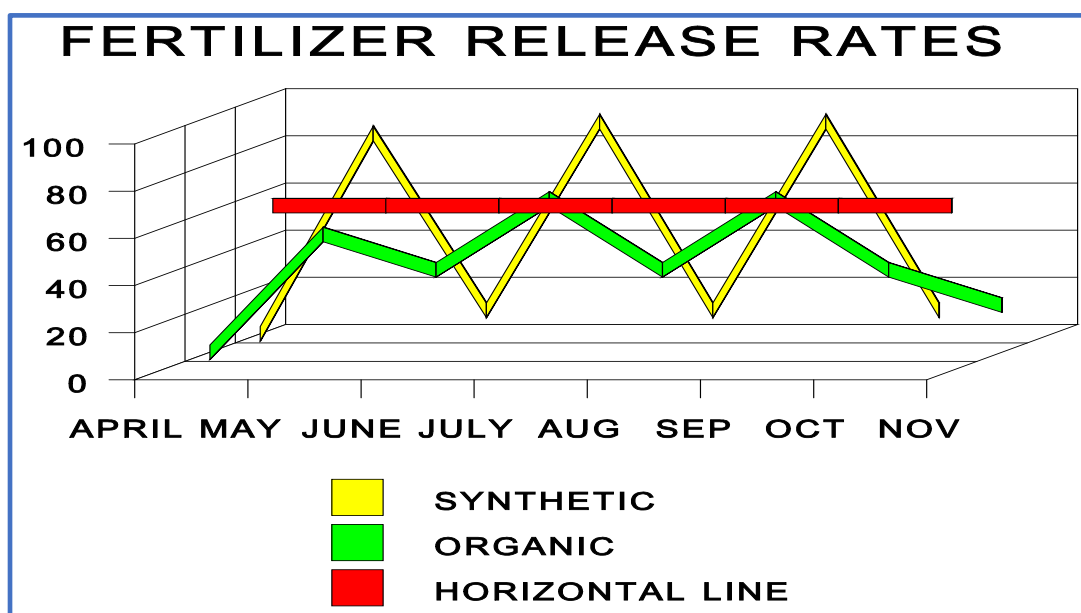
The main difference between a synthetic chemical fertilizer and an organic fertilizer is the **living microorganisms in the organics**. Synthetic fertilizers do not have these microorganisms and therefore ignore the soil environment. The organic approach to lawn care focuses on the soil and creates a natural balance that synthetic fertilizers cannot achieve. *Only fertilizers containing organic matter feed the soil with living microorganisms.*

As the soil life begins to thrive with microbial activity it easily decomposes organic matter into beneficial nutrients. The result is higher oxygen supplies and better water retention that promotes enhanced root development. The grass plant becomes healthier by creating a natural resistance to heat stress and utilizes the existing water more efficiently. This soil digestive system assists in the breakdown of harmful disease pathogens by creating natural fungi and bacteria in the soil column. This results in a healthier lawn. Did you know that a good healthy lawn has over **900 billion of these organisms** for each pound of soil? To summarize, if you create a good soil, grass will be better, thicker and healthier!

My scientific background and research led me to conclude back in 1994 (the year we started our business in Kingston) that organic fertilizers were much, much better than using synthetic fertilizers for the overall health of the lawn. **We were the first to use organics in Kingston lawn care** and continue to strongly promote them. The word organics has become a good marketing tool and in the last 5 years most competitors have included some organic programs. There is now a huge scientific body of information promoting organic fertilizers.

Despite this, most companies continue to use synthetic fertilizers.

Organic fertilizers are broken down by these microscopic organisms, not by rainwater and/or temperature, as are synthetic chemical fertilizers. The result is that the organic fertilizer is released at a uniform rate throughout the growing season and at a rate that the grass plant can take it in. Nothing gets leached below the root system and into our precious ground water. The graph below shows how an organic fertilizer and a synthetic fertilizer are released during a typical growing season. The area above the horizontal line shows the amount of fertilizer that can leach into the ground water because this is more than the grass is capable of utilizing.



Organic Fertilizers provide organic matter, which nourishes the soil and enhances microbial activity, which degrades the organic substances into plant nutrients and contributes to humus formation. Humus acts like a sponge, improves water retention in the soil and slows down evaporation, thus improving drought resistance. **Organic Fertilizers** will not burn your lawn or plants.

Organic Fertilizers encourage more earthworms, which help decompose thatch and improve air and water penetration in soil.

Organic Fertilizers will not pollute ground water or standing water.

Organic Fertilizers help prevent insect infestations by creating microorganisms that will attack accumulated thatch and feed on it. Microorganisms destroy the habitat of surface and subsurface insects, thereby reducing the chance of a major infestation.

Organic Fertilizers do not promote excessive growth in the spring.

Organic Fertilizers do not leach and therefore give a long lasting, sustained feeding of your lawn. Leaching allows for nitrates to reach down into our ground water supply.

Organic Fertilizers build the soil by stimulating microbial production and activity.

Organic Fertilizers are water insoluble and slowly available; nutrients are released by microbial activity.