



Fertilizing Your Soil

Take care of the soil and the soil will take care of the plants; that's my motto. Excessive water in the form of melting snow and rain leaches nutrients from the soil that need to be replenished. If you notice yellowing of plant leaves it is possible that you could have soil that is nutrient deficient. One way to ensure that you know what your soil needs is to have a soil test done at a licensed testing facility. A list of those facilities is available on the Ontario Ministry of Agriculture's website:

<http://www.omafra.gov.on.ca/english/crops/pub811/9soil.htm> Some experts recommend soil testing every three to five years. I personally don't believe that regular testing is necessary for the average home gardener who is seeing healthy and vigorous plants in the garden.

There are two avenues to explore when you think about adding and maintaining nutrients in your soil; chemical or organic.

The advantage to using an organic fertilizer such as compost or manure or fish emulsion is that they improve soil composition as they add nutrients. A second advantage is that they can be free if you have a compost pile or live near a sheep farm as I do. The disadvantage is that they are slow release as it takes time for materials to break down in the soil and release their nutrients for plant absorption. They are not easily measured in terms of their content of nutrients and if you don't have access to your own organic matter, they can be more expensive. An application of compost regularly in the spring and again in the fall dug into the first couple of inches significantly improves soil composition and nourishes your plants just fine. I am an advocate of using organic fertilizers whenever possible.

The advantage of chemical fertilizers is that they are readily available on the market, are accurate in terms of the nutrients that are contained in each bag or tub and are generally easier to apply than top dressing and digging in organic matter. The disadvantage is that they do absolutely nothing to improve soil composition, are short lived in the soil, being easily leached, and they are more expensive than free compost or a neighbor's manure pile. However, when a nutrient deficiency is evident, a commercial fertilizer is often the correct fix as it is immediately available to the plant's take-up system unless it is a slow-release variety. Chemical fertilizers are labeled in a combination of three macro elements, nitrogen (N), phosphorous (P), and potassium (K). Nitrogen is responsible for the greening and growing of plants and in assisting other nutrients to be absorbed into the plant. Phosphorous is responsible for root development and potassium regulates the plant's metabolism for stress tolerance while promoting fruiting and flowering. Because nitrogen is very mobile in the soil it is the most likely of the three elements to be deficient in the average home garden. As a Master Gardener, I subscribe to a blog that is for Master Gardeners by Master Gardeners and I was really interested to learn about the likely over-use of phosphorous fertilizers in home gardening which I thought I would share with you.

Linda Chalker-Scott, Ph.D, at the Puyallup Research and Extension Centre of Washington State University, wrote a paper "The Myth of Phosphate Fertilizer: phosphate fertilizers will stimulate root growth of transplanted trees and shrubs." In that paper, Dr. Scott dismisses the notion that the average gardener needs to add phosphorous to their soil, maintaining it is abundant in the soil but often rendered unavailable to the plant because of a lack of nitrogen. She also maintains that over application of phosphorous competes with iron and manganese uptake in roots, causing interveinal yellowing. In addition, phosphorous is harmful to a beneficial fungus that is found in the soil which aids in plant absorption of nutrients and without which the plant will expend more energy growing

additional roots and root hairs to accomplish the same task. In high concentration it is actually toxic in the soil. Phosphorous is proven to be harmful to waterways as it induces algal blooms, lowering oxygen levels in the water leading to the death of fish and other animals. So, while phosphorous is a crucial element for plant health and is often recommended for transplants to stimulate growth, it is already in the soil, doesn't move around much and doesn't need to be added except in the case of agricultural fields where crops deplete it.

Given that new insight, here's what I recommend:

Apply compost, manure and other organic matter to your garden to keep your soil friable and provide a steady and slow release of micro and macro nutrients to your plants. Mulch your garden to conserve moisture and reduce stress on plant roots. If you have yellowing plants, try a little boost of nitrogen in the form of ammonium nitrate and see if it fixes the problem. When using a chemical fertilizer, look for one with a lower "P" than "N" and "K". Remember that the "K" promotes fruits and flowers which are desirable in our summer gardens. Fertilize the lawn with a high nitrogen fertilizer in early spring to promote green-up and again in the fall with a fertilizer especially formulate for fall application. And don't forget to fertilize containers throughout the growing season. Most potting soil contains only enough nutrients to feed the plants for a few weeks.

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