Soil and Chocolate Cake

Just got a dump truck of soil delivered for our raised bed garden. It looks and smells great!

I've become intrigued with soil. I realize I've been interested in it for some time. I recall as a young un' a book entitled SOIL that my dad owned. I tried to read it once when I was in grade school. I didn't get too far into that masters-level college tome, but the idea of reading it never left me. At a recent prairie conference, one of the speakers reinvigorated my fascination.

That speaker mentioned that the goal for healthy soil is to have the appearance of "chocolate cake." Perhaps it was the mention of food that really got my attention! His talk revolved about farming practices, but I kept thinking this could all be applied to ecological restoration. I began reading in earnest (and yes, I could understand the books this time!).

These pictures illustrate good soil from bad soil. One is "chocolate cake," the other, well……

Soil is complicated. It has to be balanced chemically, biologically, and physically. It has to have good structure (tilth) and texture and it has to provide nourishment to sustain a vibrant group of living entities.

There are almost 90 different chemical elements in the soil, over 50 types of soil organisms, and a variety of combinations of soil texture and tilth. With that many possibilities, I decided to chunk it out and look at those deemed most important.

Chemical aspects include the 10 most important elements to

balance, soil pH, and humus and organic matter. Those 10 elements include: boron, calcium, copper, iron, magnesium, manganese, phosphorus, potassium, sulfur, and nickel. Nitrogen is important for the soil and should be added but less is needed when these 10 are in balance. Soil test provide the data required and fertilizer is the supplement that creates the balance. Soil pH is a measure of the soil's water content, referred to as alkaline or acidic. Humus and organic matter also provide nutrients for balancing plus they provide them in a slow-release form.

Biological aspects encompass the living organisms, collectively known as the soil life. Generally speaking, that includes bacteria, fungi, protozoa, nematodes, arthropods, and earthworms. Good chocolate cake smells delicious and good soil does too. That aroma comes from a terpene solution excreted by actinomycetes, a type of bacteria.

Physical properties are the particle sizes. Sand is the largest, then silt, with clay being the smallest. Loam is equal parts of sand, silt, and clay. Colloids and aggregates from organic matter give the soil "body" and help to maintain nutrients in a form that can be accessed by plants and soil organisms. According to my reading, good garden soil contains 90% loam and 5-10% organic matter.

This is a very simplified account of soil. The more I learn, the more I want to know. I have found a few books that are very good and, as always, I'll keep searching for more! Until then, I need to get out there and haul those mounds of "chocolate cake" to my garden!

Soilfoodweb.com – a great website for lots of good info
Teaming with Microbes by Jeff Lowenfels and Wayne Lewis – a excellent introduction to soil
The Biological Farmer by Gary Zimmer – although geared toward farming, this book has very good info