



The Importance of Healthy Soil

When beginning any landscaping project, healthy soil is always the first and most important consideration. Without healthy soil pest and disease problems run rampant, lawn and planting areas are unable to root properly causing plants to weaken and render them incapable of developing to their full potential. Do not mistake dirt for soil. Dirt is devoid of life, while soil is a complex combination of rock, gravel, sand, silts, clay, soluble minerals, and decayed organic material that form aggregates which support plant life as well as macro- and micro-organisms. Soil formation is a slow and continual process that takes hundreds of years to complete. Healthy soil is the gateway to a healthy yard and garden; the gateway to healthy soil is compost.

Compost can benefit every kind of soil type: silt, clay, or sandy dirt. The two things soils in poor health lack are micro-organisms and organic matter. By adding compost to soil, the macro- and micro-organisms already present in the soil benefit from the addition of nutrient rich material. The healthier the soil is the more organisms are attracted to the environment. Providing a healthy soil environment encourages more decomposition at a faster rate allowing more available nutrients to plants, shrubs, and trees. It is a compounded cycle of health, the healthier the underground ecosystem becomes the healthier the ground level ecosystem becomes. Additional benefits of compost use in the yard and garden are:

- Decreases soil erosion and compaction
- Reduces or eliminates the need for synthetic chemicals
- Conserves water by improving the soil's ability to retain moisture
- Stabilizes pH so nutrients can be readily absorbed by plants
- Allows better root penetration
- Stimulates root development due to better structure and density of the soil
- Improves drainage especially in clay soils
- Used as a mulch, compost suppresses weeds while supplying nutrients to plants

There are **five control factors for creating good compost**: volume, carbon to nitrogen ratio, moisture, aeration, and particle size. Managing these factors effectively leads to an available and affordable source of compost.

Volume

For home composting systems the largest manageable compost pile is about 5 ft x 5 ft. x 5 ft.; however, the most efficient volume is one cubic yard, 3 ft. x 3 ft. x 3 ft.

Carbon to Nitrogen Ratio

A balanced compost system consists of “greens and browns.” Greens and browns are composting-speak for nitrogen and carbon components of the compost bin. Within a healthy compost system the ratio of carbon to nitrogen components should be 30:1. Luckily this ration converts to a ratio of 1:1 by volume, in other words for every shovel full of brown or carbon material add a shovel full of green or nitrogen material.

Moisture

The organisms within the compost pile need water to survive. A healthy compost pile should be as moist as a wrung-out sponge. If the ingredients are dry when the pile is assembled, it can take an astonishing amount of water to achieve the right moisture level.

Aeration

Turning a compost pile supplies oxygen to the organisms within the system thereby increasing the rate of decomposition. Compost piles heat up as aerobes work and organic material decomposes. The longer the heat cycle can be maintained the faster compost will be produced.

Particle Size

The size of the material put into a compost bin affects the rate of decomposition. A tree stump can take 20 years to break down, while grass clippings are unrecognizable within a few days. The difference is due to the amount of surface area available to microbes which are breaking down the material, the more surface area available, the faster the rate of decomposition. Shredding or cutting the plant into one to two inch pieces provides more area for microbes to consume the material and in return the pile heats up more quickly.

Mulch

Mulch is an under-used and under-rated commodity in the garden environment. Mulches can be gravel, bark dust, wood chips, shredded leaves, or compost. The benefits of mulch far outweigh their simplicity in the garden. The addition of three inches of mulch in the spring around early vegetables provides shelter from freezing temperatures. Mulch in perennial and garden beds deters weeds, increases moisture retention, and stabilizes soil temperatures during extreme hot or cold spells. Mulching garden beds before the winter rains provides protection of garden soil from compaction and provides an available nutrient source to turn into the bed in spring. Three inches of mulch applied in the spring before weed seeds have matured will save hours of weeding in the summer months.

Some precautions for mulching should be observed during application:

- Three inches of mulch is the recommended depth, more can cause suffocation of roots and will not allow soil temperatures to increase for plant growth, less than three inches proves inadequate in weed suppression

- Keep mulch away from root crowns to avoid rot as well as an increase in pests and disease
- Use gravel mulches with landscape fabric and use it only for pathways or around drought resistant plants that can endure escalated summer temperatures
- Compostable mulches will decompose and will need to be replaced. Replacement is based on the type of mulch used, compost will need to be replaced twice a year, shredded leaves last a year, chips and bark typically last two to three years.

For more information on composting, compost bins, and vermi-composting contact the
Master Composter/Recycler Program at:
360-882-4567 or visit them at clarkcountycomposts.org.