

May Gardening Workshop: Worm Castings, Soil Testing, and Proper pH for Gardens

Worm Castings as Fertilizer (worm poop)

.1% Water Soluble Nitrogen

.9% Water Insoluble Nitrogen

1% Calcium

.2% Iron (from earthworm castings)

- Most fertilizers are (for example) 10-10-10
 - These numbers refer to the composition of a particular mix of fertilizer. The numbers are percentages and the component parts are nitrogen (N), phosphorus (P), and potassium (K), in that order. So 10-10-10 fertilizer contains 10 percent each of these three main nutrients.
- Pros of Use
 - Organic / All Natural
 - Improves soil structure
 - Provides nutrients to plants
 - May also provide help with pests
 - Spider mites
 - Aphids
 - Aids with soil aeration
 - Increases water retention
 - Aids both the plant and the soil
- A little goes a long way! Use sparingly!
- How to apply
 - Before planting, mix a little into the soil where the plant or seed will go
 - Plant seedling or plant and water well
 - Worm castings can be sprinkled at the base of the plant once they are established
 - Worm castings on your plant leaves will not burn them
- What to use on
 - Vegetables
 - Annual flowers
 - Perennials
 - Potted Plants
 - Seed/Seed Flats
 - Window Boxes
 - Hanging Plants
 - Trees/Shrubs/Berries
 - Established Roses
 - Established and New Laws
- Can be added to compost
 - A thin layer between layers of material
- Can be made into a Tea
 - 1-part castings to 3 parts water
 - Wait 24 hours
 - Stir
 - Water plants

Soil Testing

- Note
 - This does NOT test the pH level in your soil
 - It only tells you what kind of soil you have
- Materials Needed
 - Mesh sieve or old colander
 - Mason jar with lid
 - Garden trowel
 - Soil from your garden
 - Water
- Directions
 - Collect soil from your garden and sift through the mesh or colander
 - Fill the remainder of the jar with water, leaving about 2" at the top
 - Shake the jar vigorously until the contents are thoroughly mixed
 - Set the jar on a flat surface
 - Wait about 45 minutes to an hour
- Reading the Results
 - Sandy soil (Sherburne County) – if this is your soil texture, you will notice sandy particles sinking and forming a layer on the bottom of the jar. The water will also appear fairly clear. Sandy soils drain quickly but do not hold nutrients well.
 - Clay soil – when your water remains cloudy with only a thin layer of dirt particles on the bottom, then you have clay-like soil. The water stays murky because it takes longer for the clay particles to settle. Silty soils may also mimic this result. Clay soil does not drain well and may cause problems with soggy plant roots and other nutrients.
 - Peaty soil – if you have a lot of debris floating on the surface with a small amount of sediment on the bottom, then your soil may be peat-like. This also results in somewhat cloudy water, though not as murky as with clay soil. This soil is very organic but isn't nutrient rich and is prone to water logging, though adding amendments can make it suitable for plant growing. Additionally, peat soil is acidic.
 - Chalky soil – with chalky soil, there will be a layer of white, grit-like fragments along the bottom of the jar and the water will take on a pale grayish color as well. Unlike peaty soil, this type is alkaline. As with sandy soil, it is prone to drying and isn't very nutritional for plants.
 - Loamy soil – this is the soil we can hope to achieve, as it's considered the ideal soil type and texture. If you're lucky enough to have loamy soil, then you will notice clear water with a layered sediment on the bottom, with the finest particles on the top.
- Read More at:
<https://www.gardeningknowhow.com/garden-how-to/soil-fertilizers/soil-texture-jar-test.htm>

Proper pH for Gardens

- Most garden soils have a pH between 5.5 and 8.0. This number helps you determine when and how to adjust your garden soil's pH level. If the pH level is below 6, the soil is too acidic, and you need to add ground limestone. If the measurement is above 7.5, the soil is too alkaline for most vegetables, and you need to add soil sulfur.
- It is suggested that gardeners and farmers of all kinds get their soil tested at a minimum every few years. Soil tests help find potential nutrient deficiencies and other issues in your soil. A test will also evaluate your soil's pH and organic matter content. **Every species of plants likes different pH levels and amounts of nutrients to grow efficiently and stay healthy.** A test from University of Minnesota's Soil Testing Laboratory will help you address future issues before they even occur. For more information on taking and sending in samples visit soiltest.cfans.umn.edu/. One of the best times of the year to do soil sampling is right now! A soil test costs \$17.00.
- What is soil? As it turns out, it is much more than just dirt. Soil, along with water and sun, is a very basic necessity of plant life on Earth. It provides the nutrients plants need to grow and reproduce.
 - Soil can be broken up into four basic parts. About 45% is mineral. These supply nutrients such as iron, magnesium and calcium. About 5% of the soil is organic matter; dead or decaying plants. Organic matter is an important part of the natural cycle of returning resources to the soil and is often used as an indicator of good soil health. Mineral and organic matter make up the "solid half" of the soil.
 - The other half of the soil is water and dirt. Depending how recently it has rained, water will make up 20-30% of space in soil. The remaining 20-30% is air. There are lots of little air bubbles are caught in between soil particles in the ground. Healthy soils are good at maintaining a balance between the amount of water and air it holds.

Additional Learning Opportunities

- Vegetables for Everyone
 - <https://sites.google.com/umn.edu/vegetablesforeveryone>
- Gardening from the Ground Up
 - https://docs.google.com/forms/d/e/1FAIpQLSexIWoiN_qnxh1suInJRkxmL13T6kNym11JnXal_J6NCy-SLA/viewform