



Humic Acid



OBJECTIVE	CATEGORY	DIFFICULTY	SIZE OF GROUP	TIME
Determine maturity of compost, help boost fungal content of aerated compost tea, dechlorinate water	Composting and Farming	Easy	1-5 people	20 minutes

MATERIAL LIST	TOOLS & EQUIPMENT
2 cups mature unsifted compost, preferably 1 - 2 year(s) old	Fine mesh bag or pantyhose
2 cups distilled water	Quart jar with lid
OxiClean or vinegar, and water for cleaning	Trowel
70% chocolate bar to compare color to your humic acid to the choco bar	2-cup measuring container
	Large funnel (16 oz. capacity)
	Brushes for cleaning, rags
	3/16" fine mesh compost sifter for 2 cups compost

ACTIVITY
<p>Core steps of extracting the humic acid from mature compost:</p> <ol style="list-style-type: none"> 1. Measure 2 cups of unsifted compost 2. Pass 2 cups of compost through the 3/16" sifter to remove large particles (wood chips, large plant stems that did not break done/"overs") 3. Place funnel over the mouth of your jar and the mesh bag (or pantyhose) around the rim of the funnel 4. Spoon the sifted compost into the mesh bag or pantyhose; pat down so it is inside the area of the funnel, ready to receive 2 cups of water 5. Pour 2 cups of distilled water over the compost in a circular motion, slowly, moistening the compost thoroughly 6. Remove the compost and funnel and put the lid on the jar 7. Compare the 70% chocolate to the liquid in your jar. If it is the same dark brown color, this indicates the liquid is humic acid and that your compost is mature and rich. If it does not have that dark color it indicates that the compost has less humic acid and is not mature 8. Add a tablespoon of humic acid to your compost tea or extract or tap water that you want dechlorinated 9. Store your jar of remaining humic acid in a cool location.

HUMIC ACID Facts
<p>What makes compost mature? When materials first begin to decompose, bacteria dominate the process, while fungi are less active. This phase may take up to 3 months. As materials decompose, and nitrogen-rich nutrients in the materials are "cycled," after this time the bacteria give way to more activity by fungal species. The fungi start to decompose the complex carbon-rich components of the organic material. This process can take another 3-6 months to become stable or mature. Once the fungal phase reaches a certain maturity, this decomposed organic material has reached a stage which can be considered compost.</p>
<p>Humic acid is the stable mature material that is left, after fungi and bacteria have broken down plant material in compost. It has a high carbon content, and adding it to your compost tea or extract will contribute to growing fungal colonies in your soil.</p>
<p>The darker the humic acid extract, the more humic acid will be present in the compost. Generally, more humic acid is found in more mature composts.</p>
<p>The lighter the extraction, the more fulvic acids are present in the decomposing organics.. Fulvic acids (lighter in color) remain soluble – vs. humic acids which when extracted are able to coagulate and are stable.</p>
HUMIC ACID Facts cont'd.

Humus takes 1000s of years to create!

Humic acid is one substance in humus (5-8% of the organic matter in soil). Soil scientists believe humic acid contributes to plant nutrient uptake – it has a 50- 90% Cation Exchange Capacity. Humic Acids are complex and not well understood by soil scientists. IE: Soil scientists once upon a time thought that plant nutrient uptake was through minerals present in the soil.

Humates are chemical compounds that form humic acids. Humic acids exist in composts in varying degrees

Composts will have a varying amount of humic acid depending on many factors, including what your recipe inputs are, your processing technique(s), the amount of time you spend on actively managing your compost, particle size, time of year (ambient temperature), the type of compost system you use

Humic acid is a disinfectant. It dechlorinates water: City tap water contains small amounts of chlorine and chloramine that are used to kill harmful bacteria, but we don't want to kill beneficial organisms in our compost extract. Sunlight provides UV rays that will eliminate the chlorine molecules. Stirring the water speeds up evaporation time. Chloramine takes more time to evaporate than does chlorine. Adding a tablespoon of humic acid to the tap water will bind to chloramine and neutralize the bactericidal effect of tap water.

FREQUENTLY ASKED QUESTIONS	ANSWERS
What is humic acid?	Humic acid is one of the ingredients in humus. This acid helps nutrients in the soil bind to and help plant roots receive and retain water and nutrients along with mycorrhizal fungi. The presence of humic acid can dramatically increase crop yields. A deficiency can prevent farmers and gardeners from growing crops with optional nutrition
Can I apply it straight to my plants?	Yes, but it is very potent; and if you dilute it you can positively impact a larger growing area
Why use distilled water?	Distilled water has a neutral pH. The distillation process removes most viruses, bacteria and other contaminants
Are there any downsides to using humic acid?	If a plant prefers a lean nitrogen content, it could over nitrify the soil and create adverse growing conditions. A general rule of thumb: Annual veggies and flowers in general love a high nitrogen content in the soil. Some plants, however, such as many native plants, thrive in lean (more mineral content/"poor") soil.
Is it critical to clean the equipment?	Cleaning removes the pathogens left as residue on your equipment. Good cleaners include hydrogen peroxide, which can be found in (diluted) OxiClean.
How long is compost/humic acid potent?	Humic acid does not go "bad"; it can exist for centuries in undisturbed soil. Compost will start to lose effectiveness within 3-5 years of becoming mature/stable. Stable compost is best used when it is between 1 to 3 years old. The potency of the biological component dwindles after 3-5 yrs.
Why does the humic acid settle to the bottom of the jar	Shake the jar with the lid before using. Settling is a natural occurrence.

For further exploration...

Take a pH test of the lighter and darker humic acid extractions

Fun fact! - Egyptians used mud bricks reinforced with straw and humic acids