

## Fermented Plant Extracts

Fermented teas of nettle (two distinct stages), horsetail, and comfrey are recommended in *The Holistic Orchard* as sources of homegrown calcium and silica. It finally dawned on me in the 2014 growing season to make “powerhouse brews” from these basic fermented plant extracts. Both the newly-named *Calcium Tea* and *Silica Tea* come teeming with biological and nutritional wallop that radically improve leaf vigor and overall tree health. Last year’s apple crop here saw limited scab, sooty blotch and flyspeck, bitter pit, brooks spot, and other assorted spots come harvest time. Many more trials need to be done as weather is ever so relevant on the disease front – and the “recipes” can and should be tweaked to feature local resources– but what follows is something I hope all holistic growers are inspired to give a try.

### Calcium Tea ingredients

- comfrey leaf
- green nettle
- effective microbes
- whole milk (up to 5 gallons, preferably raw)
- gypsum (calcium sulfate)
- garlic scapes
- humic and fulvic acids

### Silica Tea ingredients

- horsetail
- seeded nettle
- effective microbes
- Azomite clay and/or soft rock phosphate
- granite meal and/or basalt dust
- humic and fulvic acids

The basics of these brews work as follows: Cut away the top of a 55-gallon plastic drum. Gather approximately 20# of green herbs and loose pack into drum. Fill drum two-thirds of the way with unchlorinated water. Add 2 gallons activated effective microbes, along with raw milk in the case of the calcium tea. Add 2# each of available rock powders, up to 8# total, stirring into solution at the top of the brew. Top off drum with water, using cut-off tops anchored by bricks to keep herbs in suspension. Stirring every other day is probably good to enhance breakdown of rock powders but I do little of this. Fermentation lasts approximately 10 to 14 days, which when complete is marked by a rather thorough breakdown of the herbs and an engrossing smell, to say the least. Roughly remove plant debris using a garden fork. Add 1# soluble humic/fulvic acids per drum. Brew is ready for use but can also stay in drum for subsequent sprays. A loose cover lessens evaporation.

Five gallons of each tea gets applied per acre. Absolutely run these teas through strainers before adding to the spray tank. I use a coarse strainer for pouring tea into five

gallon bucket, which then gets poured through a fine mesh strainer. This is perhaps a generous rate, in my case per 100 gallon spray tank, but the goodness seems spot on. A minimum dilution would be on the order of 3%, no less. Last season I applied both teas in the fruit sizing window, from 1<sup>st</sup> cover through 4<sup>th</sup> cover at 7 to 10 day intervals. I continued with the calcium tea in the fruit ripening window, now at 10 to 14 day intervals up till harvest. These were tank mixed with seaweed, neem oil, and other ingredients in my ever evolving spray plan.

Garlic scapes aren't usually available for my first round of brewing, both the calcium and silica teas, timed to be ready a week or so after petal fall in the apple orchard. (Scapes are the flowering stalk of hardneck garlic varieties, which are removed from the green plant when these begin to straighten in order to grow bigger garlic bulbs.) If you have remaining garlic bulbs in storage from the previous growing season, do use them up in this first round, for sure. The organo-sulfur compounds in garlic help facilitate constituent passage through a membrane, plus are a healthy herb addition in general. We are applying rich mineral brews to plant surfaces, aka foliar feeding, thus penetration into the waxy cuticle and indeed leaf/ fruit cells is certainly an added bonus. A few handfuls of scapes definitely make the way into all second round brews.

Some of you may want to add 5 to 10# of compost or worm castings ala Jerry Brunetti to each batch. Epsom salts will benefit trees needing supplemental magnesium. Molasses feeds bacteria during the breakdown phase. The rules here are not hard and fast, other than adding the humic and fulvic acids after fermentation to help chelate released minerals.

Lastly, a sludge note. A goodly charge of the rock powders probably won't dissolve into solution. This keys to the fineness of the grind. Don't worry ... any remaining mineral-rich sludge can be added to a compost pile ... which eventually finds this investment in amendments returned to the soil.

### **Additional Leads**

<https://www.thcfarmer.com/community/threads/fermented-plant-extracts-and-making-your-own-nutrient-line.18772/>

<http://www.ijmer.com/papers/vol%201%20issue%201/ZC011196202.pdf>

<http://www.frenchgardening.com/tech.html?pid=3164873867231346>

NOTE: More references wanted!

## Nutrient Analysis

August 2015 results from EarthFort Labs, Corvallis, OR

Units are ppm for all nutrients other than silica

Ratings shown are compost tea ranges ... noting compost tea goals are far more about biology.

Biology component of these fermented plant extracts has not been examined.

### Calcium Tea

- pH 5.0
- Calcium 435 High
- Humus Content 7% Low
- Soluble Salts 3884 Extremely High
- Nitrates 10 Low Normal
- Ammonium 40 High
- Phosphate 52 High
- Potassium 459 Extremely High
- Magnesium 20 Normal
- Iron 5.0 High Normal
- Manganese 0.5 Low Normal
- Boron 0.21 Normal
- Copper 0.01 Extremely Low
- Zinc 0.02 Extremely Low
- Sulfates 800 High
- Chlorides 150 High

### Silica Tea

- Silica 55.6 mg/L (test by Edge Analytical Labs)
- pH 5.3
- Calcium 145 Very Low
- Humus Content 7% Low
- Soluble Salts 3053 Extremely High
- Nitrates 60 High
- Ammonium 48 High
- Phosphate 30 High
- Potassium 354 Extremely High
- Magnesium 21 Normal
- Iron 4.8 High Normal
- Manganese 0.8 Low Normal
- Boron 0.20 Normal
- Copper 0.01 Extremely Low
- Zinc 0.01 Extremely Low
- Sulfates 200 High
- Chlorides 100 High