Artisanal Compost Tea Brewing for Everyone

Posted by Karn Piana
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Karn Piana
Artisanal Compost Tea Brewing for Everyone
June 29, 2018 08:26AM
Registered: 5 years ago
Posts: 77

I would like to kindle a discussion here for people interested in anything related to compost teas so that we may post inputs, recipes, opinions and articles pertaining (no matter how subjective or tangential) to this fascinating subject. The ability to exponentially propagate microbial life and deliver it into the soil of your botanical endeavors is a technology that stands at the threshold of an emergent paradigmatic comprehension of how things work and intersect.

This late afternoon we were able to apply our first batch of compost tea from a 30 gallon vortex brewer built and gifted to my girlfriend by her brother. As most here will likely know and relate, having made a first step into this powerful new ability to build soil is something of a game changer. I haven't yet begun to use a microscope, but the day I am is drawing ever nearer.

To begin with, here is a link to a comprehensive overview of microbial propagation through compost tea brewing and the analysis of the lifeforms therein by an autodidact wizard in soil microbiology named Tim Wilson. This man has extensive experience and a learned interest in compost tea brewing and this article not only explores and elaborates upon numerous insights he has garnered regarding specific inputs, but it also serves as a resource for identifying microorganisms. He appears to have evolved his recipe into a very simple one based upon black strap molasses which he argues feeds fungi just as well as bacteria.

For our premiere brew I used a quantity of local compost along with a small mixture of soils collected from nearby fertile areas (the rhizome of an old nitrogen fixing tree on an arroyo, a beautiful black fungal rich soil from nearby the base of an apricot in the heart of our emergent forest orchard system, and the merest snuff pinch of pulverized super-inoculated biochar carbon candy). For food I referred to an outline and method on Dr. Ingham's site, using a little kelp, fish hydrolysate, a tiny bit of humic acid, a couple drops of willow water, a splash of mycorrhizal / bacterial inoculant, and a whisper of lactobacillus. The vortex brewer requires that the compost be extracted as to not interrupt the cyclonic dynamic (meaning no bag in the mix), so the solids are combined in a micron filter bag and first massaged into a solution, incorporated, and then the 29 remaining gallons are run through the bag and into the brewer. The final mix smelled of mushrooms, and the fish hydrolysate seems to have inhibited foam from forming. We will evolve our recipe to reflect more of Tim Wilson's ideas in the next batch and continue from there.

The vortex brewer is interesting to research. If I am not mistaken, it is derived in part from the inquiries of a man named Viktor Schauberger, a contemporary of Steiner who is described in wikipedia as, "an Austrian forest caretaker, naturalist, parascientist, philosopher, inventor and biomimicry experimenter". The vortex brewer was invented by a biodynamic agriculture practitioner named Steve Storch from near Montauk in New York. It is alleged to produce something called structured water, a fourth phase state of water called H3O2. This and other esoteric benefits of vortex brewing are ideas I am planning on learning more about and I would like to discuss or read anything relating to these topics.

Finally, Chris Trump, one of the main American proponents and teachers of Korean Natural Farming uses a compost tea brewer to bioreact an indigenous fungi dominant super soil called IMO on an large scale to apply to his microbial-organic macadamia nut orchard with profound results. I have to finish a few more joints in my cedar collection box and I hope to capture my first culture of IMO in the coming week or two with some of the first rain of the year. The combination of IMO soils and the compost tea brewer is very interesting to me.

Karn Piana
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Northern New Mexico

Edited 3 time(s). Last edit at 06/29/2018 08:53AM by Karn Piana.
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Mike Biltonen
Re: Artisanal Compost Tea Brewing for Everyone
June 29, 2018 01:59PM
Registered: 10 years ago
Posts: 298

I've only just glanced over this post - fascinated by all of Karn's post's - with no time to absorb. However, what caught me was the reference to IMOs, as I am heading to my compost pile today to incorporate IMOs cultivated from the forest bordering my orchard. I look

forward to reading more about Tim Wilson and other follow ups to this post. I will also report on the relative success of my efforts. I do look to make compost tea from this IMO'd compost here over the next few months, as well directly spread the compost through the orchard.

Mike Biltonen, Know Your Roots
Zone 5b in New York
Reply Quote

Karn Piana
Re: Artisanal Compost Tea Brewing for Everyone
July 07, 2018 07:26PM
Registered: 5 years ago
Posts: 77

Thanks Mike. Your post inspired me to finish my cedar collection box and I am ready to begin capturing our own IMO. It's not necessary to do it this way, but I've been waiting for the rains to come and catapult a sporulated awakening of sorts because we've had an extreme drought since last September and things are more dormant. Evidently, it is actually a good idea to collect from a dry period in addition to as wide as possible spectrum of local locations and conditions to harness greater biodiversity; but for my first batch, I wanted to collect when things are more enlivened and reproducing.

Personally, I would be super interested to read about your experiences with IMO. It's a new world to me and the potential of it to foster health, abundance, and resilience along with the fact that to make most of the inputs costs little or no money is something I am curious about.

Another KNF tea recipe is Jadam Microorganism Solution (JMS). It appears this is not incorporated in an aerating brewer, although I'm curious about the addition of potato into an aerated mix. Here is a Chris Trump tutorial a video tutorial showing how to make a small 5 gallon batch here) JMS is a combination of a good living soil, an equal proportion of baked potato to the amount of soil, salt (15 grams to 4 gallons), and an optional inclusion of IMO culture. The soil and potato are placed in to filter bags and thoroughly massaged into the salty water solution. He actually leaves the two bags of material hanging in the center of the bucket under a cover and describes an interesting toroidal convection forming. He applies at a 1/20 dilution as a soil drench.

Karn Piana
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Karn Piana
Re: Artisanal Compost Tea Brewing for Everyone
July 11, 2018 07:59AM
Registered: 5 years ago
Posts: 77

Charybdis: It Who Inhaled the Grub's Stomach and Built a World

Tim Wilson, the man cited in a prior post above, repeatedly refers to aerated compost tea vortex brewers as bioreactors. Rather than being a superficial or pretentious difference in nomenclature, I think this is an interesting distinction that affords creative contemplation of what these devices may be capable of and how their design might potentially evolve.

A proper laboratory bioreactor allows precise control of atmosphere and temperature. It is not too much of a stretch to envision a scalable agricultural bioreactor design with a simple, user friendly interface whereby a large array of specific beneficial microorganisms could be acquired and propagated as needed. For example, I am thinking of a device like a rice cooker or instant pot that would allow a farmer or gardener to add a few inputs along with a culture, press a button, and end up with several trillion photosynthetic bacteria.

The area of exploration I am most curious about with these more engineered bioreactor systems is the realm of insect gut biota. I wasn't able to find any research related to agricultural applications in this subject, but there is a pretty wide precedent for using bioreactors to culture termite and borer beetle gut biota in order propagate bacteria capable of breaking apart recalcitrant lignin polymers in order to produce fuel sources.

What made me think of this arose from a handful of huge grubs from the Darkling Beetle (Tenebrionidae) which I encountered while planting something in the interim of another aerated tea batch. These grubs inhabit the mycelial substrate of soil and feed on plant roots. I can't draw any conclusions, but there seems to be an interesting question of what sorts of bacteria and fungi are present in the gut of a grub. Needless to say, I added a mashed dollop comprised of a single grub to the vortex in the blind hope that some benefit might confer into the final microbiologic slurry.

As things stand as outlined by Tim Wilson, the protocol for a successful tea brew appears to be very simple. At the risk of unnecessarily overcomplicating things I am still curious about various additives to an aerated environment:

The JMS concoction utilizes a potato to incorporate starch into the solution and is left in a non aerated state. I am curious about adding the potato starch into a super aerated solution. Has anyone done this?

When home brewing Lactobacillus I use rice rinse water. I am also curious about adding fermented rice water to the brew mix.

Michael Phillips' recipe for calcium tea:

Ingredients

comfrey leaf, green nettle, effective microbes, garlic scapes, raw milk (5 gallons), gypsum, humic and fulvic acids

Directions

"Cut away the top of a 55-gallonplastic 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 5 to 10# of available rock powders, 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 is probably good to enhance breakdown of rock powders but I did little of this.
Fermentation lasts approximately 10 to 14 days, which when complete is marked by a rather through breakdown of the herbs and an engrossing smell, to say the least.
Roughly remove plant debris using a garden fork. Add two quarts of humic/fulvic acids per drum.
Brew is ready for use but can also stay in drum for subsequent sprays.
A loose cover lessens evaporation."

Questions:
I am curious what would occur if a variation of this recipe were used for vortex systems which the nettles, comfrey, and garlic scapes were incorporated as separate fermented plant juice (FPJ) concentrates and the milk and other components were actively aerated for 24- 36 hours. The idea of the aerated milk as a food source for something is interesting, but without a microscope there isn't much point in trying this out. On the other hand, it might be possible to drastically cut the amount of EM used if an aerated system is employed as they could potentially propagate exponentially and the cost this recipe would be reduced significantly (unless Activated Em connotes a prior propagation and stretching of resource).

Finally, my favorite YouTube channel related to fruit tree growing in extreme environments is called, "Yes it will grow here!" by a wizard in Arizona named Jay Barringer who has an ultra densely planted food forest (300 trees on 1/8th acre). One of his secret techniques is to crack an egg into his bare root soaks and also to periodically foam up a froth of egg protein around the roots of his trees. I wonder what the addition of an egg might afford or risk in an aerated compost tea. Again, without a microscope there is no way of knowing and I am probably going to proceed fairly cautiously.

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Reply Quote

Karn Piana
Re: Artisanal Compost Tea Brewing for Everyone
July 11, 2018 07:54PM

Registered: 5 years ago
Posts: 77

Charcoal is commonly incorporated into a compost pile for a number of weeks or months to inoculate it with colonies of microorganisms. It seems like it would be more efficient and expedient shift this process to an aerated brewer.

Here is a Tim Wilson quotation on how rapidly these organisms exponentially propagate in on of these systems, "The first microbes to begin dividing and growing in ACT are bacteria/archaea and fungi (if present in the [vermi] compost). The fungi grows out rapidly as fungal hyphae and is often attached to pieces of organic matter free floating."

"The bacteria/archaea can divide every 20 minutes and appear as moving (motile) or stationary (non-motile) dots, rods and long strands. Usually these organisms are seen in large volume by the 18 hour to 24 hour period of the process, which for simplicity's sake we'll call a brew (since that is the term which has been colloquially applied)."

"In response to the population explosion of bacteria/archaea we have a congruent reactive increase in the protozoa population beginning around the 24 hour period. The usual type of protozoa which we see, given an efficient brewer is flagellates, however sometimes there will also be naked amoebae. The third type of protozoa, which we do not wish to see a ton of, are ciliates, as they can indicate the presence of anaerobic bacteria. The flagellate population can double every 2 hours so usually at the 36 hour period we have a sufficient diversity of microorganisms to call the brew finished and apply it to the soil and plants."

Perhaps a combination of aerated brewing followed by a phase of being buried in good compost would even be better. This way, some non aquatic biota could move in and diversity could increase and trophic chains could start building.

Karn Piana
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Karn Piana
Re: Artisanal Compost Tea Brewing for Everyone
July 16, 2018 04:22AM
Registered: 5 years ago
Posts: 77

Here is a link to a KNF video tutorial by Chris Trump for scalable production of liquid IMO similar to the one Mike Biltonen and I were referring to in the prior postings if anyone is interested.

Karn Piana
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Karn Piana
Re: Artisanal Compost Tea Brewing for Everyone
August 07, 2018 09:37PM
Registered: 5 years ago
Posts: 77

My first go at IMO dried out as did my first attempt at FPJ. In the last 10 1/2 months we've had about 3 inches of rain which is an inch below the annual precipitation for Saudi Arabia. The drought this year has denied us around a foot of precipitation (not counting snow pack).

Subsequently, I've successfully made a larger batch of FPJ which will be another ingredient in my compost teas, and today I'm going to put out another attempt at getting a culture of IMO. The collection method calls for the use hard boiled rice, but I'm going to try a standard batch of rice because I need the moisture. If this fails, I may try draping an additional canopy of fabric over the collection box zone.

My question and thoughts turn to the rice rinse water which I've collected in a jar. Normally, this liquid captures the culture for Lactobacillus solutions, but would this rice water not also be a means of collecting IMO? Also, wouldn't it seem like an excellent additive to combine into an AACT (actively Aerated Compost Tea)?

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