# Re: Proper compost

- *To*: SANET-MG@LISTS.IFAS.UFL.EDU
- *Subject*: Re: Proper compost
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- *Date*: Thu, 7 Nov 2002 13:15:52 EST
- *Reply-to*: Sustainable Agriculture Network Discussion Group <SANET-MG@LISTS.IFAS.UFL.EDU>
- *Sender*: Sustainable Agriculture Network Discussion Group <SANET-MG@LISTS.IFAS.UFL.EDU>

Hi Roberto -

Did I say that everyone has to test? Please go back and read my e-mail.

When is it that you would have to test? If you want to know whether you have good compost. In that case, you should test for the FULL FOOD WEB being present, so you would know that E. coli will be taken care of, if you maintain oxygen and foods for the beneficials to grow. Make sure the chemistry is correct.

However, my recent comments have been in response to the recommendation by Wil Brinton and the Compost Task Force of the National Organic Standards Board. That recommendation stated that compost tea and vermicompost tea cannot be used on food crops because of the danger of E. coli in the tea brews.

I agree with you that organic growers should not be subject to standards that are greater than conventional growers. I've stated that in previous posts. So, you really need to go to Wil Brinton, and the Compost Task Force and get them to explain their recommendation.

My personal attitude about E.coli presence is not that you would be "de-certified" if you have E. coli in your compost, but that you would need to begin to work toward finding the source of contamination and removing it, or changing your production methods to get rid of the E. coli.

We've been monitoring several composts for the last few months. One compost started at 44,000 E. coli per gram of "compost" (by my definition, not a proper compost, right?).

By keeping that compost pile aerobic (pile less than 6 feet high, moisture no higher than 50%, and NOT turned, because that destroys the aggregate structure built by the microorganisms growing in the pile), the numbers in that pile have steadily declined, and now are at an average of 42 E. coli per gram. This is well below the regulatory level for CONVENTIONAL growers in most states, as I understand the regs.

We made tea from the "compost" mentioned above when that compost was high in E. coli. We used a 100 gallon Earth Tea Brewer tea maker machine (www.composttea.com), AND added MOLASSES into the tea brew. The number of E. coli in the 24 hour, aerobic compost tea was 2.7 E. coli per ml. This is well below irrigation water levels that growers can put on their crops.

So much for those people that say molasses causes a bad set of bacteria to grow. The organism/aeration conditions of the brewing process reduced E. coli to nearly un-detectable levels.

What if there were fewer E. coli per gram in the compost to start with? In other studies we have done, E. coli was not-detectable in the tea after 24 hours when using the 100 gallon Earth Tea Brewer.

Do ALL of the compost tea machines on the market right now reduce E. coli in a 24-hour aerobic tea brew?

Apparently not, since the Growing Solutions 25 gallon compost tea machine used by BBC Lab had significant levels of E. coli at the end of a 24 hour tea brewing cycle when using sugar, molasses or barley malt. Their data have been published in the papers from May 2002 Biocycle meeting (please note that this is not a peer-reviewed scientific journal, so you need to be more critical of the methods used than you would be for peer-reviewed papers). I believe the paper can still be downloaded from the Biocycle website.

BBC Lab claimed that the tea brew maintained aerobic conditions throughout the production cycle. But they only present data in their paper for one of the many tea brews performed. Either they only monitored oxygen for ONE tea brew, or they are trying to say that oxygen use remained the SAME for all the different tea brews they performed.

There is a difference in how the organisms respond to molasses versus white sugar, or barley malt, or humic acids, or fish. When we run different food resources in the tea, we get different oxygen responses. What happened to the oxygen data for the other tea brews, if BBC Lab in fact monitored oxygen in all those runs? They claim their tea brews stayed well-aerated and that thus E. coli grows aerobically. But where are the data to support their claims?

In fact, if you monitor oxygen, maintain aerobic conditions, and have the foods to grow the competitive, inhibitory and consuming organisms, E. coli numbers will be reduced. At least, with everything that we are doing, that's what we see.

A note of caution, however. We just finished a tea run where we started with STRAIGHT manure, and ok, if you have an outrageous number of E. coli in the starting materials (in the millions per gram), you can't reduce the E. coli to even close to safe levels in 24 hours of aeration.

What does that mean for growers? Don't make MANURE tea and out it on something you are going to eat anytime in the near future. But we already knew that manure isn't compost.

But, we put compost with low numbers of E. coli in the 5 gal KIS tea brewer (www.simplici-tea.com), and E. coli was undetectable after 12 or 22 hours.

So, we now know that two tea brewers WILL REDUCE E. coli numbers; the Earth Tea Brewer, and the KIS tea brewer. We know that the Growing Solutions machine will NOT reduce E. coli numbers, based on the data that the manufacturer of the machine claims is correct.

So, the current NOP regs say that you have to perform the composting process correctly. If you do, then there is every likelihood that you will drop E. coli down to reasonable, and perhaps undetectable levels. So, use properly composted materials and things should be fine.

Experience says that if you do proper composting, E. coli will be gone. Then there's the real world, where less-than-perfect conditions prevail, and maybe, some E.coli will escape. Our data are saying that's ok if you have the right machine, and conditions are maintained correctly.

The NOP regulates the PROCESS. So, for compost tea, the PROCESS should be regulated. Use, or make, compost tea machines that will properly maintain aeration and the growth of the full food web set of bacteria, fungi and protozoa.

But, as I said before, what if you want to know FOR CERTAIN? Then you have to test.

Did I say everyone has to test? No. If you do the process correctly, then you should be fine. Tests are necessary if you want to know for certain

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I don't know about you, but I like solid data.

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