Development and Commercialization of Aerobic Digestion
Of Poultry Manure to Produce Bio-Active Fertilizers
April 2016 update

They have just started their experiments using nitric acid instead of phosphoric to control the pH. Since the "Lab" is still analyzing the samples - this report unfortunately does not have the nutrient profile for the nitric acid run.

A couple very interesting developments:

I. it appears we get higher temperatures using nitric acid
   i. the baseline temperature is 60°C instead of 50°C
   ii. the run also had a near 5 day plateau at 65°C [see trial 7 fermentation graphs]

II. The foam (from nitric acid control) was less and appeared to differ from phosphoric acid runs in that it easily "collapses on itself" and required considerably less anti foam. The greatest advantage is that by not needing ample vessel headspace to contain foam we can have bigger batches.

Phosphoric acid runs usually take 3 days to attain 60°C (see Temp overall trials 1 to 7) is an overlay of all fermentation run temperatures to date.

The Nutrients Overlays for H3PO4 (please see) are Nutrient Overlays (for the phosphoric acid runs) where a specific nutrient concentration for each run is graphed together; the nutrient concentrations were "normalized with regard to % dry matter" i.e. the concentration was divided by the % dry matter in order to account for the effect for the amount of feedstock processed i.e. the more manure fed to the bioreactor the greater the nutrient concentration.

Flocculation Trial – ClearTech a water treatment company was contracted to determine the best flocculating agent to get our decant product – the goal was to obtain *more* and *clearer* decant per batch in the *shortest period* of time.

Trial 7: we harvested over half the bioreactor (a comparable volume) after a 3 hour wait period instead of 24 to 48 hours…. The next time we'll increase the "floc agent" stock solution concentration in order to decrease the broth dilution effect when adding the 'floc agent' solution.

Decant, [our greenhouse nutrient product], is that fraction that sits on the top of bioreactor, the residual, [the Mother Liquor] is on the bottom. In a couple of weeks' time we are going to try enriching straw bales with Mother Liquor in order to try culturing oyster mushrooms.

Currently, we are building the infrastructure to grow strawberries using (100 % recycled) decant nutrient solution.

An interesting although – *very informal* observation – we trial these solutions on 'ornamental plants' one in particular a yellow Hibiscus never really 'did much':

i. it kept aborting almost all flowers
ii. constantly under attacked by aphids

We increased its nutrient solution concentration by over 50 % and in a week – it completely 'turned around' with 'little to no' aphids as shown in the photo (see Hibiscus turn around).