THE EXCITING WORLD OF FAECAL SLUDGE RE-USE
Exploring turning poop into gold

8TH JULY 2020 - 8.30 TO 13.00

9.30-10.10 Animal Feed
10.15-10.55 Biomass Fuels
11.00-11.40 Compost
11.45-12.30 Electricity/Biogas

Join us on ZOOM
Meeting ID 852 0231 3363
Block 3:

CO-COMPOST
PROBLEM

Solid waste management

- Urbanization: waste management problem **3,000Mt/day Nbi**
- Methane emissions **570,758.4MT CO2E/year** https://www.epa.gov/warm

Feecal sludge management

- Informal settlement **no sewer** (36% in Nbi) wsup.com
- Sewer treatment plant **few & don’t cover** every place
ECoH provides organic based solutions for recycling of both food and market waste into organic fertilizer within **24hrs** so as to enhance soil health for increased food production in a **sustainable** and **environmental friendly** way that encompasses a **Green and Circular Economy**.

**From Garbage to Cabbage**
**PRODUCTS**

**YAD® BIO-VITALIZER** is an organic fertilizer that **rejuvenates** our soils to enhance crop production, while still fertilizing the crops.

**ECoH WT®** is a liquid concentrate of natural beneficial enzymes that **breakdown organic matter** to eliminate pollution & enhance water quality.

**24Hr Composting machine** recycles organic waste into a resource, organic fertilizer. The composting machine, **composts, sterilizes** and **dries** the organic fertilizer, thus readily available for farm use.
RESEARCH & DEVELOPMENT

Findings:

• *E. coli* reduced 99.9%
• BOD reduced
• COD reduced

Table 1: COD and BOD changes at the inlet and outlet of the sewage ponds

<table>
<thead>
<tr>
<th>Sampling date</th>
<th>COD (mg/l) INLET</th>
<th>BODs</th>
<th>COD (mg/l) OUTLET</th>
<th>BODs</th>
</tr>
</thead>
<tbody>
<tr>
<td>June, 18th 2007</td>
<td>600</td>
<td>66</td>
<td>352</td>
<td>54</td>
</tr>
<tr>
<td>July, 23rd 2007</td>
<td>288</td>
<td>84</td>
<td>110</td>
<td>32</td>
</tr>
<tr>
<td>August, 20th 2007</td>
<td>316</td>
<td>88</td>
<td>224</td>
<td>58</td>
</tr>
<tr>
<td>September, 17th 2007</td>
<td>52</td>
<td>12.5</td>
<td>68.6</td>
<td>50</td>
</tr>
</tbody>
</table>

% reduction

Table 2: *E. coli* CFU changes at the inlet and outlet of the sewage ponds

<table>
<thead>
<tr>
<th>Date of sampling</th>
<th>INLET CFU</th>
<th>OUTLET CFU</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 18th, 2007</td>
<td>6.0 x 10^3</td>
<td>5.0 x 10^3</td>
<td>1.5 x 10^5</td>
</tr>
<tr>
<td>July 23rd, 2007</td>
<td>3.0 x 10^4</td>
<td>1.0 x 10^7</td>
<td>2.0 x 10^5</td>
</tr>
<tr>
<td>August 20th, 2007</td>
<td>2.0 x 10^4</td>
<td>7.0 x 10^4</td>
<td>9.9 x 10^4</td>
</tr>
<tr>
<td>Septembers 17th, 2007</td>
<td>5.0</td>
<td>7.0</td>
<td>15.9</td>
</tr>
</tbody>
</table>

Table 3: pH and pond colour changes at the inlet and outlet of the sewage ponds

<table>
<thead>
<tr>
<th>Date of sampling</th>
<th>INLET pH</th>
<th>OUTLET pH</th>
<th>INLET Colour</th>
<th>OUTLET Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 18th, 2007</td>
<td>7.36</td>
<td>7.05</td>
<td>Cloudy</td>
<td>Slightly cloudy</td>
</tr>
<tr>
<td>July 23rd, 2007</td>
<td>7.23</td>
<td>7.10</td>
<td>Cloudy</td>
<td>Clear</td>
</tr>
<tr>
<td>August 20th, 2007</td>
<td>7.31</td>
<td>7.10</td>
<td>Cloudy</td>
<td>Clear</td>
</tr>
<tr>
<td>Septembers 17th, 2007</td>
<td>6.90</td>
<td>7.90</td>
<td>Cloudy</td>
<td>Clear</td>
</tr>
</tbody>
</table>

From the observation of the downward reduction trend on the effluent discharge parameters under research, it is envisaged that long-term use of ECOH WT® will continue to improve further the medium being used.

5.0 CONCLUSION

The incorporation of ECOH WT® in effluent treatment system provides an alternative option for consideration in waste management. Being a biological product, it will be suitable for incorporation into both solid and liquid waste to benefit from the properties noted. Due to the impact noted on *E. coli* reduction, ECOH WT® will be safe as a medium to improve the quality of water because it does not add any harmful microorganisms.

The natural attenuation of the pond system in the farm has contributed towards a lower *E. coli* count with a reduction of about 99.9%.
Organic matter:
Nairobi – 3,000Mt/day of water dumped
36% of population live in informal sectors – no sewer

Opportunity:
80% population live on farm
About 2m Mton fertilizer imported (USD 400M)
PROS & CONS

Pros

- Eliminate methane emissions
- Compost in 24Hrs (both food waste & faecal sludge)
- Little space utilization
- Sterilization - 95 degrees operation temp
- Customized for client need
- Short ROI
- Attainment of the SDGs

Cons

- High initial capital outlay
- Electricity requirement****

‘Machine can be sized to client’s need, as you can see my colleague Joseph inside a 5ton machine while on the left is 50Kg machine
‘My fruit trees are now producing in clusters, as you can see this is a cluster of 9 oranges’, Mr. Titus Kitonga, Marion Farm, Makueni
Nigeria,
Ethiopia,
Kenya

Own factory

Nzoia Sugar

Top Award
Green Growth Forum

+300 farmers

2006

2008

2010

2009

2013

2018

2020

Government Agencies

Research

NGOs and Associations

Institutions

Investors
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EXPERIENCE WITH CO-COMPOSTING

KUSHTIA MUNICIPALITY, BANGLADESH

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ERAS – ACTIVITIES
ERAS – ACTIVITIES
CHALLENGES & OPPORTUNITIES
Q & A
CO-COMPOST
THANK YOU FOR JOINING US!