
people
unlimited
HiVOS

Bioslurry:
A Supreme fertilizer.

The story of Poo...

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LES: Lavinia's Eco Solutions

For Hivos

#bioslurry

Outline

- Hivos.
- Background: population, agriculture, and energy.
- Biogas.
- Bioslurry: introduction, composition and values.
- Examples.
- Conclusion:
  - Strengths and risks.
  - Thus: a new gold?

Hivos

- Humanist development organization.
- Focus on social and green issues.
- Green issues: productive landscapes and green energy.
- Green energy: among others, biogas and carbon market.
- Biogas market: 12.000 Indonesia & 45.000 ABPP (Africa).

Background

- Population growth: 9 billion by 2050.
- Agricultural increase and efficiency:
  - Now: 40% of land surface.
  - 4% of global GDP.
  - 14% GHG emissions; with e.g. deforestation 17%.
- Energy:
  - 2 billion lack clean, safe and sustainable energy.
  - 2 million deaths per year due to soot and smoke.
  - CO_2 emissions from unsustainable woodfuel and charcoal burning.

Biogas

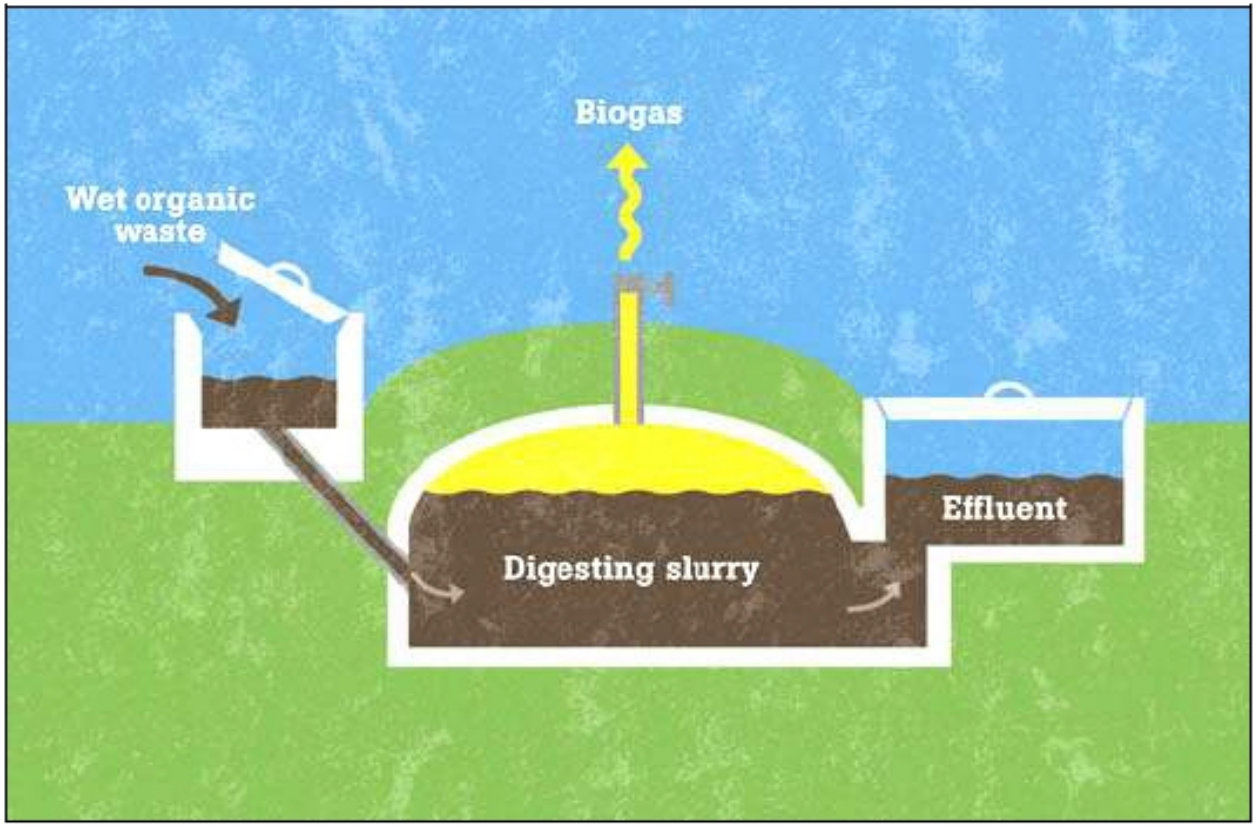


Figure 1: Basic components of a fixed-dome biogas digester plant

Bioslurry # 1

Biogas and Bioslurry:

- 25 – 30% of total dry matter = combustible gas and residue, 70 – 75% = fresh slurry.
- Bioslurry = plant nutrients. Plants need macro & micro.
- 6 m^3 digester: 15 tons of slurry/year, enough for 1 ha, or +/- 3 ha, if composted with organic waste.
- 2 – 20 years.
- Asia vs Africa: costs.
- 5 kg firewood, 1,5 kg charcoal, and 0.6 liters of kerosene.

Bioslurry # 2

Composition:

- Dung kind, water, animals, feed rate and type.
- More N? Improves C/N ratio and compost making.
- N, P, K, Zn, Fe, Mn, and Cu.

Application:

- 10 – 20 t/ha in irrigated areas. 5 tons / ha in dry farming.
- Increase of around 25% crop revenues.
- Tillage? N value greater (+ add urine).
- Form: liquid, dried, composted.

Bioslurry # 3

FYM and CF vs Bioslurry:

- Generally better than FYM. 30% more N.
- CF: negative aspects, but with bioslurry = better yields than bioslurry alone.

Bioslurry # 4

Profitability:

- Break-even point: less than 22 months.
- US$ 14 p/m saved on energy, firewood en kerosene.
- US$ 50 p/y saved on CF.
- And more...

Bioslurry # 5

GHG emissions reductions:

- CO_2 emission reductions.
- CH_4 emission reductions.
- (potentially) Nitrogen oxides emission reductions.

Source: Farmer T. Mekonene, Ethiopia, survey results, 2013

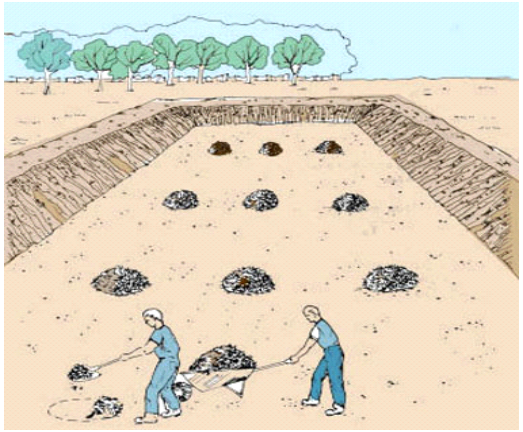
Examples

All kinds of crops, but here:

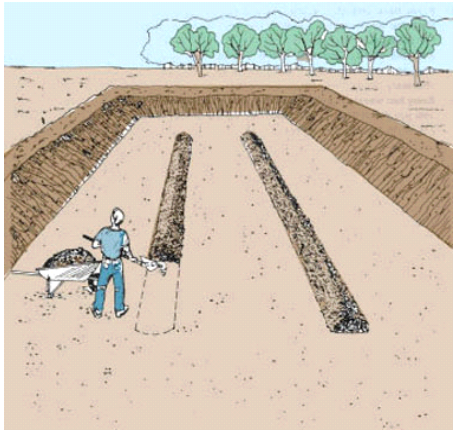
- Banana
- Rice
- And: algae, worms and fish.

A fish pond

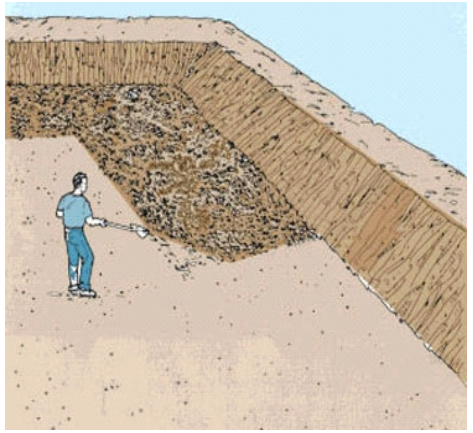
Figure 13 Newly constructed or drained fish ponds



Composted bio-slurry stacks or heaps application



Raw application



Bottom spreading

Conclusion

Bioslurry is:

- To decrease soil erosion.
- Treat seeds for higher germination.
- Plague repellent.
- Better yields: improved coloration of fruits and veg. Tenderness and taste of leafy veg. Less nitrates.
- Increased feed value of fodder with protein.
- Concentrated feed for cattle, pigs and fish and production of earth worms and algae.
- Production of Vit. B12 and amino acids.

Continued

- Flowers and vegetable growth.
- Increases availability of nutrients for soil, micro flora and Nitrogen and Phosphor.
- Reduces use of phosphate.
- Reduces waste water, water pollution, GHG emissions, and noxious odours.
- Reduces weed growth, decrease insects and flies.
- Reduces cash outlay on CF.

Continued

Negative aspects:

- Almost pathogen free, but not fully (but better than FYM).
- (potentially) Increase of N_2O and ammonia emissions.
- More labour input required (composting, transportation).

Thus: A new gold?