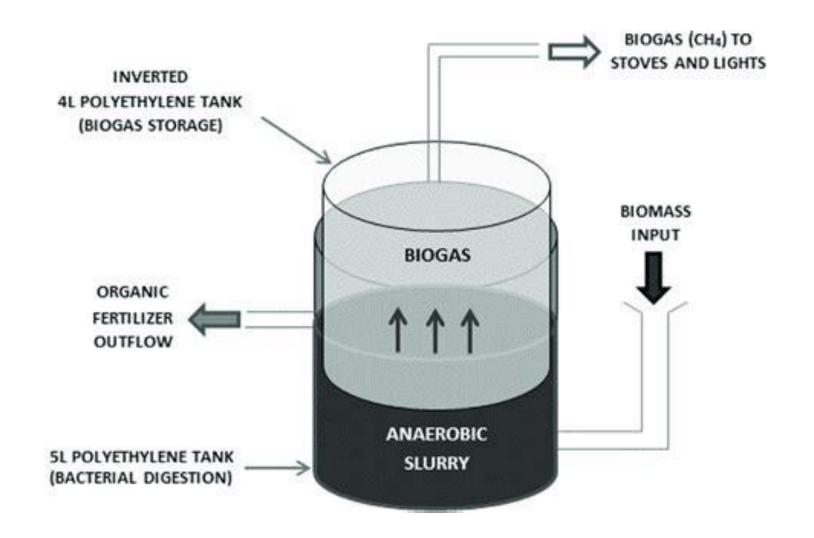
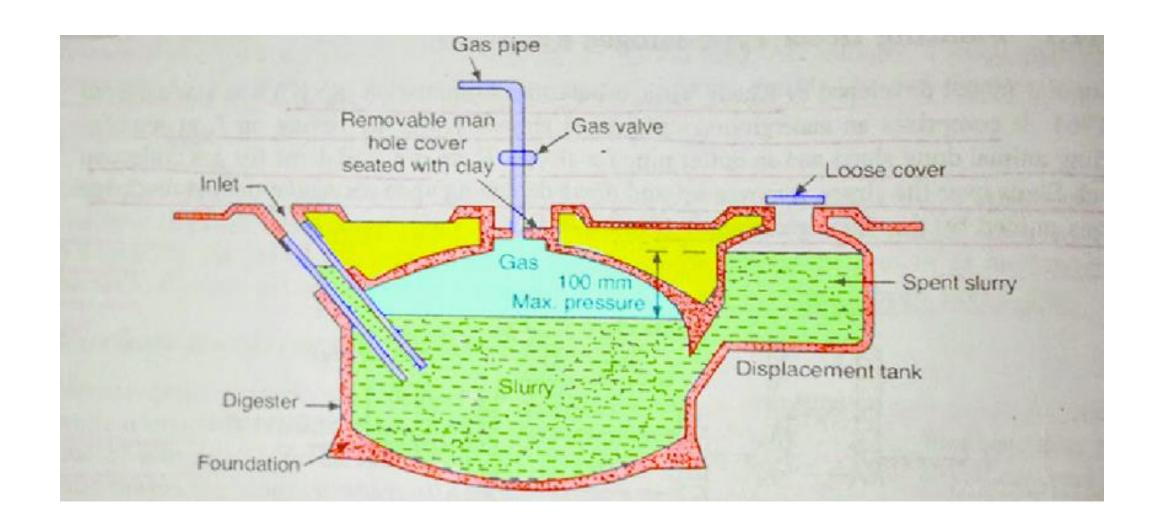
## Anaerobic digestion

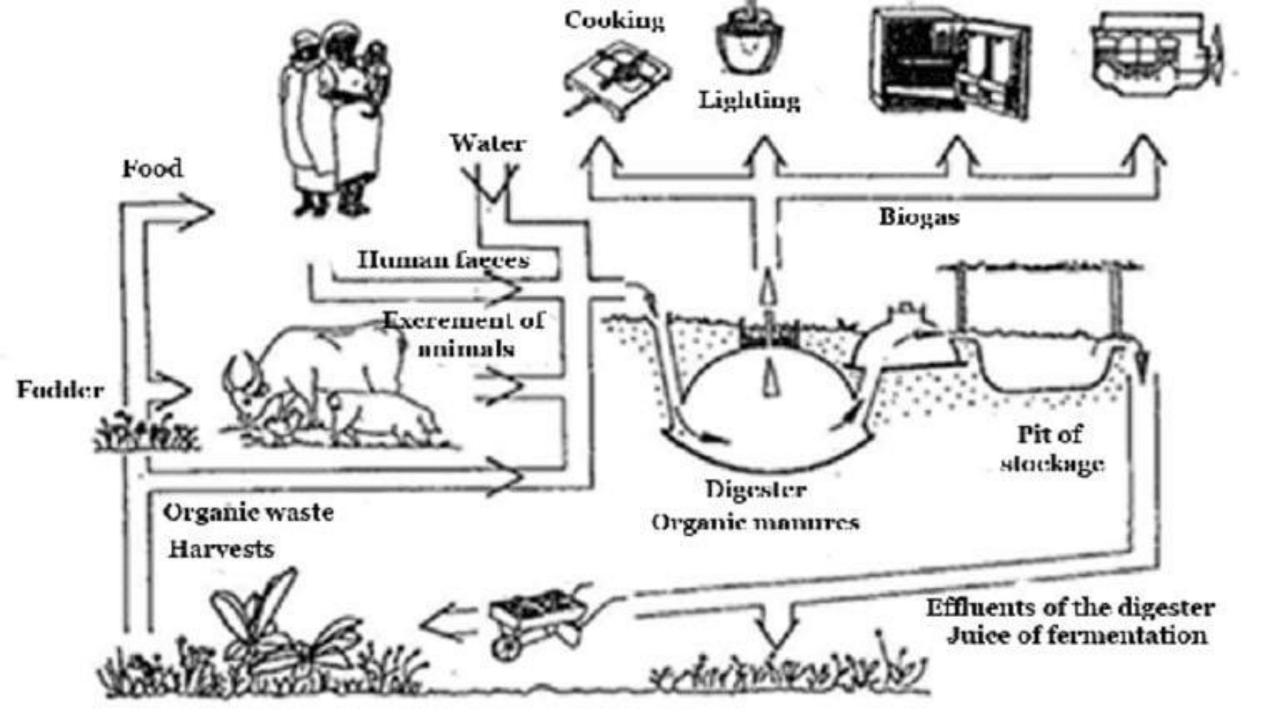
Energy from waste









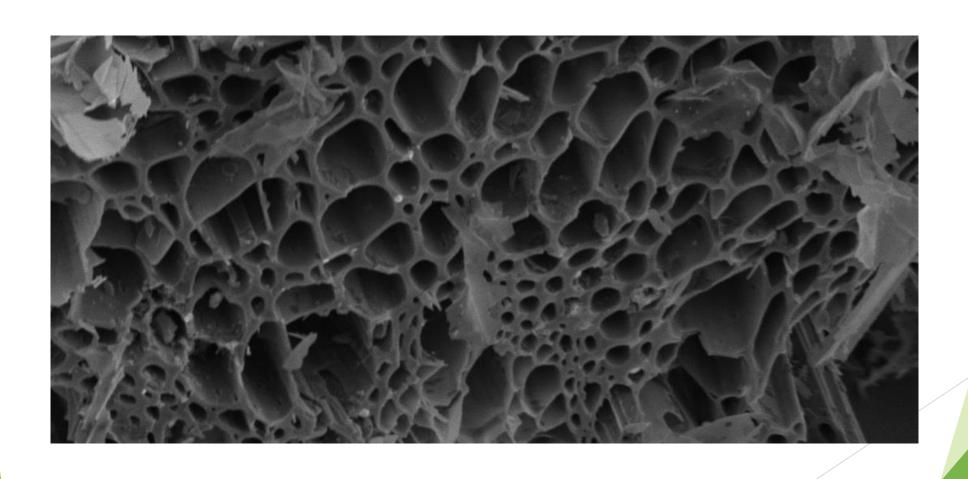




## Digestate as a fertilizer

Biogas digesters convert waste matter into a natural gas-like fuel and a nutrientrich digestate by-product. This digestate has the potential to be used as a soil amendment to benefit crop production with or without biochar, a purported nutrient sponge. In a greenhouse study of several crop species, the effects of digestate fertilization on crop growth, photosynthetic efficiency, vegetable production and chemical nutrient levels were tested. Results indicate that increasing potency of the applied digestate fosters higher growth and fruit production rates of several studied plants but to a lesser degree than a conventional fertilizer. More potent digestate application increases antioxidant capacity, total phenolics content and ascorbic acid levels in kale compared to the control chemical fertilizer test groups but has confounding results on legume nutrient levels. Additionally, the combined application of biochar and biogas digestate added to compost and used as potting media positively impacts crop germination. This work has relevance to agrarian communities that could benefit from recycling livestock and food waste into fuel and a renewable fertilizer.

## Biochar pores





Home biogas system

## Permaculture

is a design system that models on nature.

In gardening that translates to:

- \* No bare soil keep it covered at all times!
- \* Diversity is key the bigger the variety of plants the better
- \* Minimum tillage digging causes weeds and upsets soil structure
- don't forget soil is full of life, try not to disturb it if you don't have to!

