



BIOSLURRY: Superior Organic Fertiliser

Utilisation and Management
H a n d b o o k



Introduction to Bioslurry

Bioslurry definition

Bioslurry is the liquid discharged at the biodigester outlet after gas has been tapped for energy. It is superior organic fertilizer; a co-product of the biodigester. It is composed of 93% water and 7% of Dry Matter. It contains Nitrogen, Phosphorous, Potassium, Zinc, iron, manganese and copper among others. Wet slurry is alkaline (8.12PH), odourless and pathogen free.

Quality of Bioslurry depends on:-

1. Species and Age of the animal from which the dung is drawn
2. Quality of Water used in mixing the dung
3. Types of animal feed and feeding rate.
4. Use of urine along with dung
5. Storage, treatment and application of the slurry

Modes of Application/Utilization

1. Liquid
 - Direct Feeding –In rows, Around the crops –Cover with soil after application.
 - Foliar (Liquid Manure) – See Page 5 of the Handbook
 - Irrigated- Through pipes
2. Solid-Compost Making –See Page 6 of the Handbook
3. Pellets and seed coating
4. Animal Feeding –Fish, chicken, Pigs

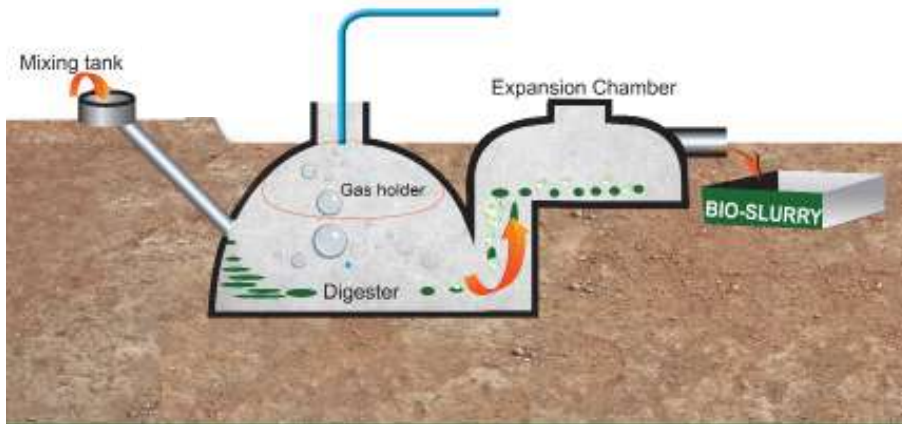


Direct Application: Pumping directly to the farm



Dry/Solid application after Compositing

Bioslurry production process



Biogas Plant (Fixed dome-model)

Benefits of Bioslurry

- An excellent soil conditioner, adds humus
- Enhances the soil's capacity to retain water.
- Safe to handle
- Highly nutritious and contains trace elements
- Is pathogen-free. The fermentation of dung in the reactor kills organisms causing plant disease including weeds
- It repels termites and pests that are attracted to raw dung.
- Effective for a period of over 3 years in soil while chemical fertilizers serve only one cropping season
- Savings on chemical fertilizer and pesticides (Cash)



Bioslurry management structures

Slurry Pit and compost pits

Bioslurry Pits



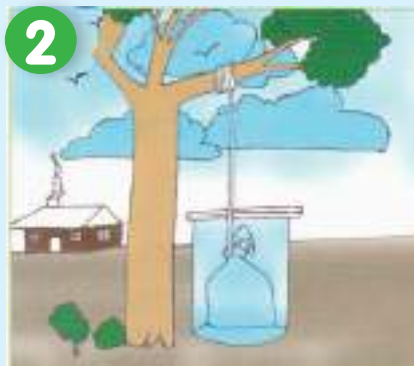
Bioslurry pit with improvised roof to protect from rain and sun



Liquid manure from bioslurry



1. Fill a sisal sack with slurry, tie the top of the sack with a string. Fasten the sack to a strong pole/stick. Fill a drum/bucket with clean water-equivalent to the amount of slurry in the sack



2. a). Place the sack in the drum/bucket with water, leave it there for the next 15 days. Ensure the sack is suspended in the drum/bucket

2 b). Cover/Store under a shade to avoid nutrient loss



3. Stir after every three days by rotating the pole/stick around the drum



4. After 15 days remove the sack, the liquid manure is ready for use

5. To 1 part of liquid manure add 2 parts of water and apply to crops

Bio-Slurry for making Compost

Compost is made by adding layers of different organic materials in a heap. As it rots, the heap becomes compost. There are many different ways to make compost. This is just one way.

Why use compost?
Compost is a free organic fertilizer. It improves soil structure and helps soil to hold water.
Compost increases yields.

A tree provides shelter

A Cover protects and keeps the compost moist

Use a Temperature Stick to check that the heap is rotting.

6 Sprinkle Ash - it adds potassium and helps the heap rot

5 Green plant material adds nutrients

4 Top soil for insects and worms

3 Bio-slurry from eg cows, chickens, pig or rabbits adds nutrients

2 Sprinkle Water if necessary to help the heap to rot

1 Dry plant/grass material gives soil carbon and improves soil structure

Step by Step

Dig a pit and make a bed for the compost with twigs or stalks

Make the Base



Heap the layers



Turn the heap



Apply to crops



- Find a shady area
- Dig a pit
- Make a bed with twigs or stalks

- Heap the layers in the order above
- Repeat the layers 2 or 3 times
- Cover with soil and dry

- After 3 weeks turn the heap
- This helps the compost to rot
- Turn again after another 3 weeks.

- After another 3 weeks the heap will be brown and lumpy. This means the compost will be ready.
- Dig a ditch around crops add compost and cover
- Use for planting, top dressing or commercial purposes

Bioslurry application in Vegetable Growing



1. Planting:

- Dig and prepare 1 4ft (wide) x 20 ft (long) double dug garden
- Pour 10-20 litres per m², liquid bio-slurry, or spread (broadcast) 4,000-8,000 kg per acre, bio-slurry compost
- Plant the vegetable seedlings, observe spacing then mulch



2. Pour bio-slurry in the garden as the crops grow



3. Control insect pests:

- Mix 1 (bio-slurry) : 2 (water).
- Filter to remove impurities from the mixture
- Spray the crops
- Alternately pour the mixture between the crop rows then mulch



4. Harvesting the vegetables

BioSlurry application in Coffee Growing



1. Planting:

- Dig a 2ft (wide) x 2ft (deep) pit.
- Mix 1 (composted bio-slurry): 1 (black loam soil).
- Plant the coffee seedling at 3/4 pit depth
- Water the seedling then mulch



2. Growing plants:

- Dig canal around the plant roots, 2-3 ft from the stem
- Canal size; 1ft (wide) x 1ft (deep)
- Fill canal with either liquid or bio-slurry compost
- Cover with soil then mulch.



3. Control of insect pests



4. A good harvest

BioSlurry application in Banana Growing



1. Planting

- Dig a 2ft (wide) x 2ft (deep) pit
- Mix 1 (composted bio-slurry) : 1 (black loam soil).
- Plant the banana sucker at 3/4 depth.
- Water the sucker then mulch



2. Growing plants

- Dig a canal around the plant roots, 2-3 ft from the stem
- Canal size: 1ft (wide) x 1 ft (deep)
- Fill canal with either liquid or bio-slurry compost
- Cover with soil then mulch



3. Spraying



4. Good banana yields

BioSlurry application in Mushroom Growing



1. Preparation of growth media (substrate)

- Mix 1 (bio-slurry compost): 3 substrate-cotton seed husks, been hulls, dry banana leaves).
- Soak the mixture for 1-3 days. Drain for 45-60 minutes.
- Steam for 2-3 hours, cool on a clean tarpaulin or polythene sheet ready for inoculation.



2. Substrate inoculation

- Inoculate (sowing) the substrate with spawn (mushroom seeds) in a black polythene bag.
- Suspend the mushroom gardens in a dark room and follow the routine management practices.



3. Growth



4. Good mushroom plants and yields

BioSlurry application in elephant (nappier) grass Growing



1. Preparation and Planting

- Cut Stems of 3 nodes each.
- Plant on ridges dug in rows of 3ft apart
- Space the cuttings at 2ft apart along the ridges or rows.
- Pour liquid bio-slurry in between the plant rows, mix with soil, then mulch



2. Growing plants

- Pour liquid bio-slurry in between the plant rows
- Mix with soil, then mulch



3. Harvesting and fertilisation

- Harvest the crops at 2 1/2- 3 ft height
- Weed the harvested area.
- Pour liquid bio-slurry in between the plant rows
- Mix with soil, then mulch



4. Good elephant grass yield

Bio-Slurry application in Pig Feeding



1. Preparation

- Mix 1 (liquid bio-slurry) : 1 (maize bran) to form a semi-solid brownish mixture
- Alternatively, mix 7 (liquid bio-slurry) : 3 (mixed pig feed ration.)



2. Semi-solid brownish mixture



3. Feeding:

- Place the feed mixture into a feeding trough.
- In addition, provide clean drinking water.

4. Good performing pigs

Bio-Slurry application in Local Poultry Feeding



1 Preparation

- Mix 1 (liquid-bioslurry) : 1 (maize bran) to form a semi-solid brownish mixture
- Alternatively, mix 7 (liquid bio-slurry) : 3 (mixed chicken feed ration).



2. Semi-solid brownish mixture



3. Feeding:

- Place the feed mixture into a feeding trough
- In addition , provide clean drinking water



4 Good performing local chickens

Bio-Slurry application in Fish Pond Fertilisation



1. Pond preparation

- Disinfect new or old pond for restocking by pouring in lime at 225kg per 1,000 m² pond area
- Add 20 kgs of bio-slurry per 1,000 m² of pond area to fertilise the pond
- Leave the pond to stand for at least 1 week, then add water.



2. Stocked pond

- Tie 0.3-0.4 kg of either liquid or composted bio-slurry per m² of water surface in a porous sack
- Suspend the sack in the water inlet corner of the pond
- Allow the bio-slurry to dissolve slowly into the water, hence fertilising the pond



3. Fish Growth



4. Good fish harvest





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