

1. Biol

This liquid manure is a result of the decomposition of animal and vegetable waste, manure and crop residues, etc in the absence of oxygen. It contains nutrients that plants assimilate easily, making them more vigorous and resilient.

2. Production of biol

Bio oil can be prepared in different containers such as plastic pipes and cylinders or barrels.

Production of biol in plastic sleeves

Inputs:

- 50 kg. de fresh manure
- 5 kg. of ash or lime
- 5 litres of fresh milk
- 5 kg. of brown sugar or molasses or sugar cane juice
- 2 kg. of rock salt.
- ½ kg. of yeast

Materials:

- 2 metres thick or transparent plastic.
- 3 metres of black plastic
- 60 cm $\frac{3}{4}$ " hose
- 1 disposable plastic bottle, cut in half.
- 1 3" PVC ring
- Rubber strips
- 2 meters of wood slat
- 4 cloves
- A meter of wire.

Preparation:

- Mix all the inputs in a container outdoors in the shade.
- Level the soil by removing stones and any other existing plant debris to avoid holes in the sleeve.
- Construct an arc of 50 centimetres wide x 1 metre long.
- Tie one end of the sleeve with a strip of rubber.
- Add the mix of inputs
- Fit the end of the base of the ½ bottle in a PVC ring, which will be attached to the other end of the sleeve, and tie it with a strip of rubber.
- Attach the upper end of the ½ bottle to a hose and go over the pre-built wooden arch.
- Connect the other end of the hose to a bucket, which will receive the fluid produced by the bio-digester

Production of biol in cylinders or drums

For a 200 litre cylinder requires the following inputs:

Inputs:

- 50 kg. of fresh cattle manure
- 2 litres of fresh milk
- 4 kg of vegetable ash
- 4 kg. of cane molasses
- 50 litres of water.

Materiales:

- A 200 litre drum with lid
- An inner tube piston pump
- A metre clear plastic hose
- A disposable one-litre bottle

Preparation:

- Fill in the fresh manure into a plastic drum or can
- Add water and mix evenly with the help of a piece of wood.
- Add the ash and the weeds, continue moving the mixture
- Add the diluted milk and stir the mixture.
- Seal the drum hermetically to allow the fermentation process to be completed.
- Close the container hermetically so that the fermentation process is carried out.

- Finally, add a spout made from the inner tube of a tyre to the lid of the drum and join it up to a hosepipe. Put the other end of the hosepipe in a disposable bottle filled with water. During the fermentation process this allows any gas produced to escape.

3. Using biol

To use biol proceed as follows:

- Transfer the biol to buckets when ready.
- Before applying biol, mix with water to avoid the crop burning.
- The solid part of biol, produced by the pouring process, is used as natural fertiliser around the plants.

4. Advantages

- It can be made from the raw materials found in the community.
- A fixed recipe is not required
- Its preparation is easy, and you can adapt it to different types of containers.
- It is low cost.
- It improves the vigour of the crop and allows it to more efficiently withstand attack from pests and sicknesses and the adverse effects of the climate.

4. Disadvantages

- It takes a long time to prepare and ferment.
- For large expanses, a backpack is required for application.

Electronic resources

Biol preparation

Author: INIA

<http://www.inia.gob.pe/genetica/insitu/Biol.pdf>

Biol preparation and use

Author: Alvarez, Fernando

<http://www.solucionespracticas.org.pe/publicacionessp/publicacion.php?id=NDkx>

Better kitchens

Author: Madeleine Muñoz Zegarra

<http://www.heiferperu.org/04iniciativas/documentos/sistematizacioncocinas.pdf>

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