



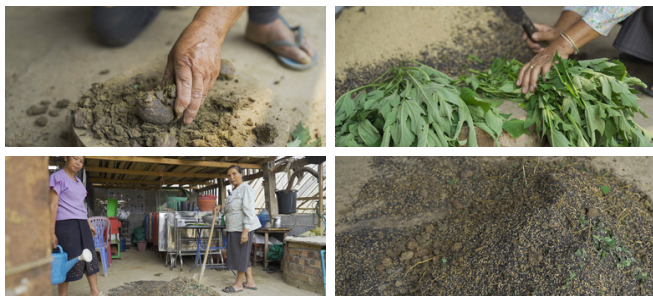
Advantages / Expected Results

Bio-fertilizer is considered an excellent eco-agricultural technique that meets the following agroecology principles:

- Recycling
- Input reduction
- Soil Health

Points of Attention

- Bio-fertilizer does not produce immediate visible results like chemical fertilizers.
- Farmers should have livestock on the farm in order to reduce the cost of buying animal manure to make the compost.
- Use organic matters available locally, such as rice straw or Job's tears husk.



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Our farmer's experience



Ms. Boachan, Yone village, Paek district, Xiengkhouang province

Organic matter plays a crucial role in providing nutrients to plants. Without it, soil can become compacted and may lose its ability to retain water. Conversely, sufficient organic matter enhances soil fertility and aligns with the adage, "Rich soil, thriving crops". However, incorporating organic matter into soil should involve proper composting beforehand.

Ms. Boachan, President of Paek Organic Agriculture Cooperative, a management committee member of Lao Farmer's Association has more than 30 years of experience in organic agriculture. Bio-fertilizer (compost) is one of the key inputs in the production process, which she produces herself.

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ALiSEA
AGROECOLOGY LEARNING ALLIANCE
IN SOUTH EAST ASIA



Technical Leaflet BIOFERTILIZER PRODUCTION TECHNIQUES



Location of implementation
Yone village, Paek district,
Xiengkhouang province

Agroecological system:

Zone	Main activities	Climate	Rainfalls	Temperature
Upland	Vegetable	Seasonally tropical (rainy season: June to October)	~ 1300 mm/year	Avg max: 35°C - Avg min: 14°C



How to make biofertilizer

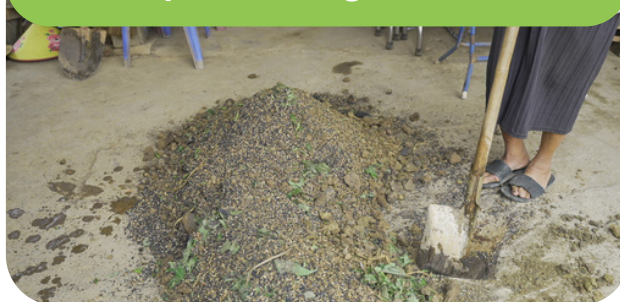
Bio-Fertilizer by Ms. Boachan is a simple but effective recipe that is widely used. It takes only 7 days for fermentation and has a very low production cost.

Step 01: Prepare raw materials



Use manure from animals such as cows, buffaloes, pigs, ducks, and chickens. All types can be used, but ensure that the manure is dry. If the manure contains large clumps, break them into smaller pieces first.

Step 02: Mixing materials



Combine dry animal manure with burnt rice husks in a 50:50 ratio (one sack of manure mixed with one sack of burnt rice husks) and add fine bran to promote the growth of beneficial microbes, helping them proliferate effectively. You can also include leguminous plants as an additional component to enrich the compost.

For bio-fermented water, also known as bio-extract or microbial extract, sugar is one of the components used in the process. Use natural water sources such as spring or groundwater. Avoid treated water like tap water, which is disinfected and unsuitable for fermentation.

The ratio is as follows: for 10 liters of clean water, add 5 tablespoons of sugar and 5 tablespoons of bio-fermented water. Ideally, use molasses or red sugar. If unavailable, white sugar can be used as a substitute.



Step 03: Fermentation



After 7 days of fermentation, check the compost by placing your hand inside the bag. If it is still hot, it means it is not ready to use yet, so you should wait longer than 7 days. The proper way to store it is to keep it in a suitable location, such as on the house floor or in the garden, by placing it in a bag. Keep the compost off the ground, protected from rain, and away from direct sunlight. Ensure proper airflow to allow the microorganisms to thrive in the compost. If stored correctly, the compost can last for up to one year without losing its quality.

How to use the fertilizer

The amount of compost required depends on soil quality. However, The common use is about 100-300 g per 1 m². By adding compost to the soil, it gradually becomes more fertile and nutrient-rich every year. enhancing its quality for better crop growth. Using compost is different from using chemical fertilizers. For example, with chemical fertilizers, you might apply 1 kilogram the first year, then increase to 1.5 kilograms the next, and 2 kilograms in the third year. However, with bio-compost, you start by applying 3 kilograms per square meter, and in subsequent years, you can reduce the amount to 2 kilograms per square meter. The key benefit of using compost is that you apply it every time, but not in large amounts.