



Solid Fermented Organic Manure (SFOM) and Liquid Fermented Organic Manure (LFOM)

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Sustainable agriculture has gained global importance due to the adverse effects of chemical fertilizers on soil health, the environment, and human well-being. Among the various eco-friendly alternatives, fermented organic manure and liquid fermented organic manure play a crucial role in improving soil fertility, enhancing crop productivity, and promoting long-term agricultural sustainability. These organic inputs are prepared through the controlled decomposition and fermentation of natural materials such as animal dung, crop residues, plant extracts, and beneficial microorganisms. Fermentation enhances the availability of nutrients, increases microbial activity, and improves the efficiency of nutrient uptake by plants. This article discusses the concept, preparation methods, benefits, and applications of fermented organic manure and liquid fermented organic manure in modern agriculture.

Solid Fermented Organic Manure (SFOM)

Solid Fermented Organic Manure is two types:



1. Granules Form



2. Powder Form

Fermented organic manure is a solid organic fertilizer produced by the microbial decomposition and fermentation of organic materials under controlled conditions. The fermentation process stabilizes organic matter, reduces harmful pathogens, and converts complex nutrients into simpler, plant-available forms.

- Common Raw Materials
- Cow dung and cow urine
- Farmyard manure (FYM)
- Crop residues and straw
- Green biomass and weeds
- Oil cakes (neem cake, castor cake, groundnut cake)
- Kitchen waste and agro-industrial by-products

Preparation Process

1. Collection of materials: Organic materials are collected and chopped into smaller pieces to accelerate decomposition.
2. Layering and mixing: Materials are layered or mixed with cow dung or slurry to introduce beneficial microbes.
3. Moisture management: Adequate moisture (50–60%) is maintained to support microbial activity.
4. Fermentation period: The heap or pit is covered and allowed to ferment for 30–60 days, with periodic turning to ensure uniform decomposition.
5. Maturity: The manure becomes dark, crumbly, and earthy-smelling, indicating readiness for field application.

Nutrient Composition

- Solid Fermented organic manure typically contains:
 - ✓ Total Nitrogen (N): 1.6–2.5%
 - ✓ Total Phosphate (P₂O₅): 0.65–1.0%
 - ✓ Total Potash (K₂O): 1.1–1.5%
- In addition, it is rich in micronutrients, enzymes, organic acids, and beneficial microorganisms.
- Benefits of Fermented Organic Manure
- Improves soil structure, aeration, and water-holding capacity
- Enhances microbial diversity and activity in soil
- Provides slow and sustained nutrient release
- Reduces dependency on chemical fertilizers
- Improves crop yield and quality over time
- Environmentally safe and cost-effective

Application Methods

- Basal application before sowing or transplanting
- Incorporation into soil during land preparation
- Application in orchards and plantations around the root zone

Liquid Fermented Organic Manure (LFOM)

Liquid fermented organic manure is a nutrient-rich organic solution obtained by fermenting organic materials in water. It contains soluble nutrients, beneficial microbes, and growth-promoting substances that are readily absorbed by plants.

Nutrient Composition

- Liquid Fermented organic manure typically contains (on dry basis):
 - ✓ Total Nitrogen (N): 3.5–5.0%
 - ✓ Phosphorus (P₂O₅): 2.0–3.0%
 - ✓ Potassium (K₂O): 2.0–2.5%



Liquid Fermented Organic Manure

Ingredients Used

- Cow dung and cow urine
- Jaggery or molasses (carbon source)
- Pulse flour or legume powder (protein source)
- Plant extracts and green leaves
- Water
- Beneficial microbial cultures (optional)

Preparation Method (Generalized)

1. A container (plastic drum or earthen pot) is filled with water.
2. Organic ingredients are added and mixed thoroughly.
3. The mixture is stirred clockwise and anticlockwise daily to introduce oxygen.

4. The solution is allowed to ferment for 5–15 days, depending on the formulation.
5. After fermentation, the liquid is filtered and diluted before use.

Benefits of Liquid Fermented Organic Manure

- Quick nutrient availability to crops
- Improves root development and plant vigor
- Enhances photosynthesis and flowering
- Increases resistance to pests and diseases
- Improves soil microbial activity when applied to soil
- Suitable for organic and natural farming systems

Application Methods

Soil application: Through irrigation water or drenching

Foliar spray: After dilution, sprayed on leaves for quick absorption

Seed treatment: Used for seed or seedling treatment to enhance germination

Comparison Between Solid and Liquid Fermented Organic Manure

Aspect	Fermented Organic Manure	Liquid Fermented Organic Manure
Form	Solid	Liquid
Nutrient release	Slow and sustained	Quick and readily available
Application	Basal and soil incorporation	Soil drenching and foliar spray
Main benefit	Long-term soil health	Immediate crop response
Preparation time	30–60 days	5–15 days

Role in Sustainable Agriculture

Both fermented organic manure and liquid fermented organic manure play a complementary role in sustainable and organic farming. Solid fermented manure improves soil health and fertility over the long term, while liquid fermented manure supports crop growth during critical stages. Their combined use reduces chemical input costs, enhances soil biodiversity, and supports climate-resilient farming.

Conclusion

Fermented organic manure and liquid fermented organic manure are essential components of eco-friendly and sustainable agricultural practices. Through microbial fermentation, these organic inputs enhance nutrient availability, improve soil health, and promote healthy crop growth without harming the environment. Adoption of these practices not only benefits farmers economically but also contributes to food security, environmental conservation, and sustainable rural development. Integrating both solid and liquid fermented organic manures into farming systems is a practical and effective step toward achieving sustainable agriculture.