

**No-10: Farmyard Manure (FYM): Natural Treasure for Healthy Soil**

For generations, farmers have relied on natural manures to maintain soil fertility and grow healthy crops. Among all organic manures, **Farmyard Manure (FYM)** remains one of the most useful and dependable. It is easily available on farms, improves soil health, reduces dependence on chemical fertilizers, and supports long-term productivity. In today's farming, where soil fertility and cost of cultivation are major concerns, FYM continues to play a very important role.

**What is FYM ?**

FYM is a well-decomposed mixture of **animal dung, urine, leftover feed, and bedding materials/feeds** such as straw, dry leaves, and crop residues collected from cattle sheds. Fresh dung and urine are not called FYM. They become FYM only after proper decomposition. During decomposition, microorganisms break down the waste and convert it into dark, soft, and nutrient-rich manure that plants can use.

**Why FYM is Important in Farming**

Soil is like the farmer's bank. If nutrients are removed every season and nothing is returned, the soil becomes weak. FYM helps return nutrients and organic matter to the land. It improves soil structure, supports beneficial microbes, and helps crops grow stronger. It also reduces fertilizer losses and increases fertilizer-use efficiency.

**How to Prepare FYM:** Good FYM needs proper collection and proper decomposition.

**The Trench Method (Pit Method) or heap:**

The old habit of piling manure in an open heap on the ground wastes precious nutrients. Sun dries it out, and rain washes the goodness away. The **Trench Method** is the best way to preserve every drop of nutrient value. **1.Dig the Trench:** Select a high ground area where rain water doesn't pool. Dig a trench that is 6 to 8 meters long as per convenience, 1.5 to 2 meters wide, and 1 meter deep. **2.Collect Daily Shed Waste:** Every morning, collect the animal dung, urine-soaked bedding litter, and leftover fodder. Spread a layer of dry crop residue at the bottom of the trench first to soak up liquids. Animal urine is valuable because it contains nitrogen and potassium. It should not be allowed to drain away. **3.Fill Section by Section:** Start filling the trench from one end. Pack the waste tightly. When a section reaches about 1.5 feet above ground level, shape it into a rounded dome like a roof. **4.Seal with Mud:** Plaster the rounded top layer with a thick mix of mud and cow dung. This mud plaster acts like a lid—it stops rainwater from entering and prevents nutrient loss and protects from rain and sun. **5. Maintain moisture:** Keep the material moist but not waterlogged. If it's too dry the decomposition will be slow. If it is too wet there will be nutrient loss and bad smell. **6. Turn if needed:** One or two turnings help uniform decomposition. Leave it until it becomes fully decomposed.

**How Much Time is Required to Prepare FYM?**

Usually, FYM takes **3 to 4 months** under warm conditions. In winter or dry weather, it may take **4 to 6 months**. Time for FYM preparation depends on: Moisture, Temperature, Type of residues, Turning and Method of storage.

### How to Judge that FYM is Ready:

- **The Color Test:** Ready FYM loses its original yellowish-brown dung color and turns a **dark brown or near black**.
- **The Smell Test:** It should lose all offensive, foul odours of raw dung or ammonia. Instead, it should smell like **fresh, damp earth** after the first rain.
- **The Texture Test:** The original structure of the bedding straw or crop residue should be completely gone. It should be **crumbly, lightweight, and fine-grained**, easily slipping through your fingers like loose soil.
- If large undecomposed straw pieces remain, it still needs time to get ready.

### Nutrient Content in FYM

Nutrient content varies depending on animals, feeds, and storage. Average nutrient content in well-decomposed FYM: **Nitrogen (N): 0.5%**, **Phosphorus (P<sub>2</sub>O<sub>5</sub>): 0.2%**, **Potassium (K<sub>2</sub>O): 0.5%**. It also supplies sulphur, calcium, magnesium and micronutrients like zinc, iron, boron and copper. Along with nutrients, FYM provides valuable organic carbon.

### To Supply 50 kg Nitrogen through FYM, How Much FYM is Needed?

Average nitrogen in FYM = **0.5%**. That means: 100 kg FYM can supply 0.5 kg nitrogen. To supply 50 kg nitrogen, ~ **10,000 kg FYM** ( $50 \div 0.5 \times 100$ ) is needed. So, farmers need around: **10 tonnes FYM per hectare** to supply **50 kg nitrogen**. As mentioned earlier nutrient content varies depending on animal type and feeds used.

### Precautions to Avoid Nutrient Losses

Adequate care during preparation, handling and application can save a lot of nutrients.

- 1. Prevent urine loss:** Animal urine contains valuable nitrogen and potassium. Use bedding material to absorb urine.
- 2. Keep manure covered:** Sun and heavy rain cause nutrient loss. The sun destroys nitrogen, turning it into gas (volatilization), while heavy rain washes dissolved nutrients deep into the ground where roots can't reach them (leaching).
- 3. Avoid leaving dung in open fields:** Open exposure causes drying and nitrogen loss.
- 4. Keep it moist, not waterlogged:** The pile needs a little moisture to decompose properly. If it dries out completely, the decomposition stops. If it is dripping wet, it suffocates the good microbes.
- 5. Apply decomposed FYM before sowing:** Apply well decomposed FYM before sowing and mix with the soil. Poor quality FYM needs time to decompose.
- 6. Avoid long storage in open air:** Long exposure lowers nutrient value.
- 7. Use pit floor or compact base:** This prevents nutrient leaching.

### Negative Effects of Incompletely Decomposed FYM

Many farmers make the mistake of applying "raw" or half-rotten manure because they are in a hurry. Do not do this! Using incomplete decomposed FYM may create problems. Using

half-rotten FYM causes Nitrogen lock-up as microorganisms use soil nitrogen to decompose fresh materials in FYM and plants suffer nitrogen deficiency. Raw manure attracts pests, especially white Grubs and termites, which eat crop roots. It can also harbour harmful fungi. Animal dung is full of weed seeds. If the manure isn't fully decomposed, those seeds stay alive and will sprout vigorously across your clean fields. Fresh manure application may heat up soil and damage roots. Further, fresh manure can create unpleasant odour and uneven field conditions. Plants may not get nutrients at the right time leading to slower crop growth.

### **Why Use FYM?**

Like any farming input, FYM has incredible strengths, but also a few practical limitations.

### **The Big Benefits**

**Improves soil structure:** It acts like a sponge, making heavy clay soils looser and helping loose sandy soils hold together better. **Better water holding:** Soils mixed with FYM holds moisture much longer, helping crops survive dry spells. **Better drainage:** Heavy soils become more porous. **Provides all Nutrients:** Unlike chemical fertilizers that usually provide only one or two nutrients, FYM supplies a little bit of almost every nutrient a plant needs, including micronutrients like zinc and iron. **Feeds the Soil Life:** It serves as food for friendly earthworms and useful microbes that naturally unlock nutrients for plants. Increases beneficial microbes and improves biological activity. **Reduces fertilizer losses:** Chemical fertilizers work better with FYM as it helps in retention of nutrients. **Supports long-term soil fertility:** Maintains productivity season after season. **Eco-friendly and low-cost:** It can be prepared locally from farm waste along with cow dung and does not pollute the environment. **Improves crop growth and yield:** Healthy roots and stronger plants.

### **Limitations of FYM**

Compared with chemical fertilizers, nutrient content in FYM is lower. Loading, transporting, and spreading tons of heavy manure takes a lot of time and physical effort. Quality and nutrient content differs from farm to farm. Good quality FYM preparation needs time, patience and management. Storage space required due to its bulky nature. The nutrients are released slowly as the manure breaks down. It is excellent for long-term soil health, but won't save a crop that is actively starving and not always enough for immediate crop demand.

### **Final Message for Farmers**

FYM is more than cattle waste—it is a valuable farm resource. Properly prepared FYM improves soil, saves fertilizer cost, supports crop growth, and keeps land productive for future generations.

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