

## What are organic materials and manures

Organic material and manures are those materials that come from plant or animal waste or byproducts such as cattle or poultry manure, composted rice straw or other crop residues, sewage sludge, oil cakes, green manures, and legume clippings.

## How to use organic materials and manures

Organic material or manure is normally applied uniformly across the field, two or more weeks before being incorporated into the soil during land preparation. Sometimes rice straw is directly composted in the field.

## Why use organic materials and manures

Manures and other organic sources are used to improve soil fertility and soil organic matter content and to provide micronutrients and other growth factors not normally supplied by inorganic fertilizers. Application of these materials may also enhance microbial growth and nutrient turnover in soil.



Addition of rice straw in the field and manure

Organic material	% N	%P2O5	% K2O
Crop residue (rite straw)	0.5-0.8	0.15-0.26	1.2-1.7
FYM (cattle manure)	0.8-1.2	0.44-0.88	0.4-0.8
Conn post	0.5-2.0	0.44-0.88	0.4-1.5
Sewage sludge	1.6	1.76	0.2
Pig manure	0.7-1.0	0.44-0.66	0.6-0.9
Sheep & goat manure	2.0-3.0	0.88	2.1
Poultry manure	1.5-3.0	1.15-2.25	1.0-1.4
Oil cakes	2.5-8.0	0.66-2.86	1.2-2.3
<b>Green manures</b>			
Sesbania	1.7-2.8	0.1-0.2	1.4-1.9
Azolla	2.0-5.3	0.16-1.59	0.4-6.0

(Examples for the nutrient content of various organic materials)cv

## How much do I apply

Urea (46% N)	Poultry Manure (2% N)	Cattle Manure (1 % N)	Compost (0.5% N)
217 kg	5,000 kg (or 5 t)	10,000 kg (or 10 t)	20,000 kg (20 t)

Nutrient source	N (%)	P2O5 (%)	K2O (%)	Price (INR/kg)	Amount required (Kg)	Price (INR) for 100 kg N, 50kg p2o5 & 50 kg K2O per ha
Cattle manure	0.8	0.3	1	2.15	12.5	Rs. 26878.5
Urea	46	-	-	10.03	217	Rs. 5519.05
SP36	-	36	-	15.05	139	
KCI	-	-	so	15.05	83	

### Applications of organic material can be difficult as it:

1. Can be bulky, with high handling and transport costs.
2. May have high costs per unit of nutrient.
3. Is not always available.
4. Has to be applied at the beginning of the crop (thus early applications may not meet later crop demand for nutrients).
5. Can have an unpleasant odor, making it undesirable for farmers and others.

### Combining organic manure and fertilizer

It is advisable to combine the use organic manures with the application of inorganic nutrient sources as needed. This allows farmers to use organic materials or manure available on-farm at low cost to supply a portion of the crop's demand for nutrients and improve soil fertility where required. The use of organic manures available on-farm can return high yields and profit when combined with inorganic fertilizer, particularly on upland or poor lowland soils. However, it is often not profitable to buy organic fertilizers even if they are sold as fortified organic fertilizers, which is a ready mix of organic and inorganic fertilizers.

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