



IMPORTANCE OF ORGANIC FERTILIZERS W.S.R. TO MANURE AND PLANT BASED HERBAL FERTILIZERS

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ABSTRACT

Manure or compost prepared from natural sources acts as fertilizer and improves growth of plants. Manure can be prepared from sheep, cow, poultry, horses and other natural sources. Manure firmly known as “complete” fertilizer, it contains lot of organic matter and most valuable as organic soil amendments. The natural fertilizers are rich source of nitrogen and other nutrients; they stimulate growth of green leaf. The herbal fertilizers also contain calcium and phosphate thus promotes strong root systems and flowering. The herbal fertilizers mainly used for growing plants, flowers, bulbs and fruit trees.

KEYWORDS: Manure, Fertilizer, Compost, Kunapajala.

INTRODUCTION

Manures are animal and plant wastes which used as plant nutrients in the form of natural fertilizers. The release of nutrients occurs after the decomposition of natural compost. Wastes from human, animal and vegetable sources are used for improving the crop productivity. The animal, human and plant residues contains nutrients in complex organic forms which improves soil physical properties and fertility.^[1-4] The major sources of manures are depicted in **Table 1**. The major nutrients of herbal fertilizers depicted in **Figure 1**.

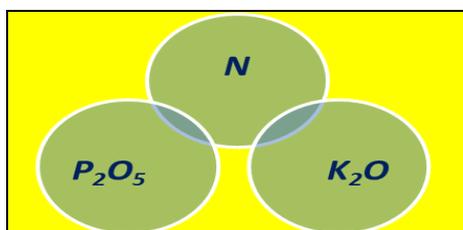


Figure 1: Major nutrients of herbal fertilizers

Table 1: Major sources of Manure.

S. No.	Sources of Manure
1	Cattle shed wastes-dung
2	Slurry from biogas plants
3	Human urine, sewage and sludge
4	Droppings of sheep and goat
5	Meat meal, blood meal, horn and hoof meal
6	Fish wastes
7	Fruit and vegetable processing wastes
8	Crop wastes-sugarcane trash

Manures can be categorized into two categories based on the concentration of the nutrients; these are organic manures and concentrated organic manures. Bulky organic manures contain small percentage of nutrients and these types of manure used in large quantities.

The examples of bulky organic manures are as follows.

- Farmyard manure (FYM)
- Compost
- Green-manure

The advantages of bulky organic manures are as follows:

- ✚ They supply micronutrients to the plant.
- ✚ Improves soil structure, water holding capacity and other parameters required for proper growth of plant materials, etc.
- ✚ Bulky organic manure increases availability of nutrients to the growing plant.
- ✚ Cost effective and easy availability
- ✚ Many options and alternatives are also available

Farmyard manure

Farmyard manure is decomposed mixture of dung and urine of farm animals with other waste materials. Farmyard manure mainly contains following nutrients in varied ratio.

- ❖ N: 0.5 % approximately
- ❖ P₂O₅: 0.5 % approximately
- ❖ K₂O: 0.2 % approximately

Chemical preservatives can be used in farmyard manure to reduce losses and to enrich manures. The gypsum and superphosphate are chemicals used mainly in farm yard

manure. These chemicals prevent volatilization loss of urea present in urine and increases calcium, sulphur & phosphorus content of manure.^[4-7]

Partially rotten farmyard manure can be applied few weeks before sowing and fully rotten manure should be applied just before sowing. Farmyard manure can be used effectively for improving crops of vegetable like tomato, potato, carrot, radish, sweet-potato and onion, etc. The sugarcane, rice, oranges, banana and mango, etc. can also be growing well using farm yard manure.

Concentrated organic manures

Concentrated organic manures possess high nutrient content than bulky organic manure; the examples of common concentrated organic manures are blood meal, fish manure and oilcakes, etc. These also resembles organic nitrogen fertilizer, they provides readily usable ammoniacal nitrogen and nitrate nitrogen which formed due to the bacterial action. These organic fertilizers supply available nitrogen for a longer period of time.

The oil cakes manure prepared from oil residues, after the extraction of oil from the oilseeds, the remaining portion is dried as cake and can be used as manure. These may be two types; edible oil cakes and non-edible oil cakes. Edible oil cakes are groundnut cake and coconut cake etc. The examples of non edible oil cakes are castor cake, neem cake and mahua cake, etc.

Karanj cake, linseed cake, niger cake and safflower cake, etc. are also used as oil cake manure. Non-edible oil cakes can be used for horticultural crops, they provides nutrients like N, P₂O₅ and K₂O.^[7-10]

ORGANIC FERTILIZERS (HERBAL BASED FERTILIZER)

Organic fertilizers contains materials belongs from mineral sources that also contain plant essential nutrients. These fertilizers overcome problems associated with synthetic fertilizers and maintain soil fertility. Organic fertilizers release nutrients into the soil solution and helps to balance nutrient contents thus promote healthy growth of crop plants. These fertilizers act as energy source for soil microbes and improves structure of soil thus enhances growth of crop.

Advantages of Organic Fertilizers (Herbal Based Fertilizer)

- ✚ Decomposes material into their essential elements.
- ✚ Boost up nutrient accessibility to plants.
- ✚ Reduces stresses caused by heat and drought on rowing plant.
- ✚ Improves nutrients and water holding capacity of soil.
- ✚ Expands capacity of soil to develop different types of crops.
- ✚ Fulfill the deficiency of soil nutrients.
- ✚ Slow release provides consistent supply of nutrients.

- ✚ Improves buffering capacity thus resist change in pH.
- ✚ Cost effective and availability.

Micronutrients of Herbal Based Fertilizer

- ✓ Iron, manganese, boron, zinc, copper, molybdenum, chlorine, nickel, sodium, cobalt, silicon.

Macronutrients of Herbal Based Fertilizer

- ✓ Nitrogen, phosphorus, potassium, calcium, magnesium and sulphur.

These macro and micronutrients enhance growth of plant and offer protection from diversified climatic conditions. The macro and micronutrients of natural fertilizers provides resistances against insect and fungal infections and compensating the deficiency of essential elements like zinc.

Organic fertilizers are slow releasing fertilizers and possess benefits of trace elements. They contain important macronutrients; nitrogen (N), phosphorus (P) and potassium (K). The organic fertilizers improve chemical contents of soil by inducing microbial and fungal action thus promotes physico-chemical parameters requiring for plant growth. Here symbiotic relationship may observe since microbes feeds plant and plant feeds microbe.

The plant nutrition comes from two sources; decomposition of organic material into simple elements by microorganisms and from inorganic materials (minerals rocks, sand and clay). These essential elements support normal life cycle of plant. Natural fertilizers improve nutrients contents of soil and fasten microbial action to speed up process of decomposition.^[8-10]

Limitations of Herbal Based Fertilizer

- Natural fertilizers not provide an immediate fix.
- Concentrations of nutrients are not high as compared to synthetic fertilizers.
- Variability in compositions thus difficult to fix parameters for quality control standardization.
- Manures and blood meal based herbal fertilizers can burn if over-applied.
- Slow release may cause delayed response
- Sometimes appreciable response not observed in term of plant growth and yield.

Sources of Herbal Fertilizers

- *Tila (Sesamum indicum L.)*
- *Masha (Vigna mungo)*
- Honey
- *Guggulu (Commiphora wightii (Arn.))*
- *Marica (Piper nigrum L.)*
- *Jatamansi (Nardostachys grandiflora DC.)*

CONCLUSION

The organic or natural fertilizers improve growth of plants and can be prepared from the natural materials

like; plant, minerals and animals waste, etc. The natural fertilizers are rich source of nitrogen and other nutrients including calcium and phosphate thus promotes growth of whole plants. Organic fertilizers decomposes material into their essential elements, improves nutrients and water holding capacity of soil, fulfill the deficiency of soil nutrients and improves buffering capacity thus resist change in pH, therefore enhances fertility of soil and promotes growths of crop.

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