

Class Notes

Class: XII

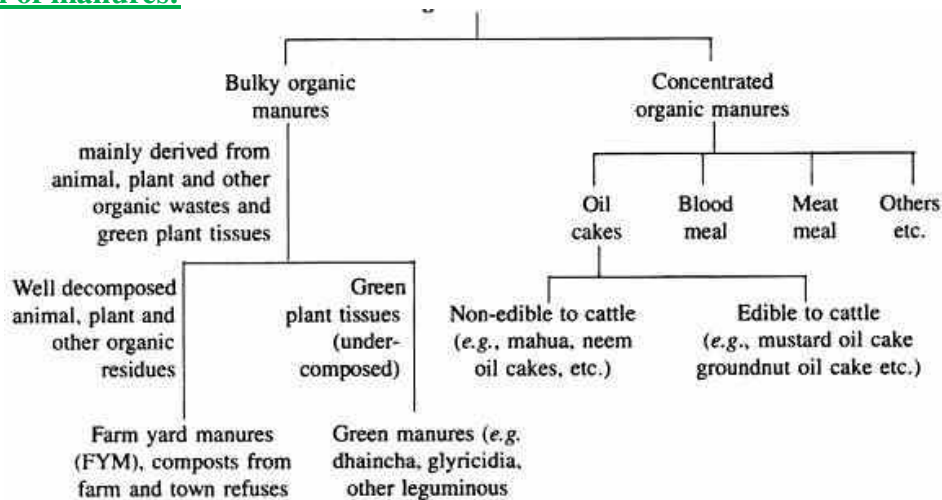
Topic: Manures and fertilizers

Subject: AGRICULTURE

Manures and fertilizers

Manure: Manures are the substances which are organic in nature, capable of supplying plant nutrients in available form, bulky in nature having low analytical value and having no definite composition and most of them are obtained from animal and plant waste products. Formerly, the word in use was “DUNG” in English (at present fertilizer). It is derived from the old German word “TUNG” meaning storage pit covered with manure for protection of soil against cold. From Tung “TUNGEN is derived (to cover) and then dung (fertilizer) as the cover. The corresponding English word “Fertilizer” which is now accepted internationally in view of the old English word DUNG was derived from Latin word “Fertil”.

Classification of manures:

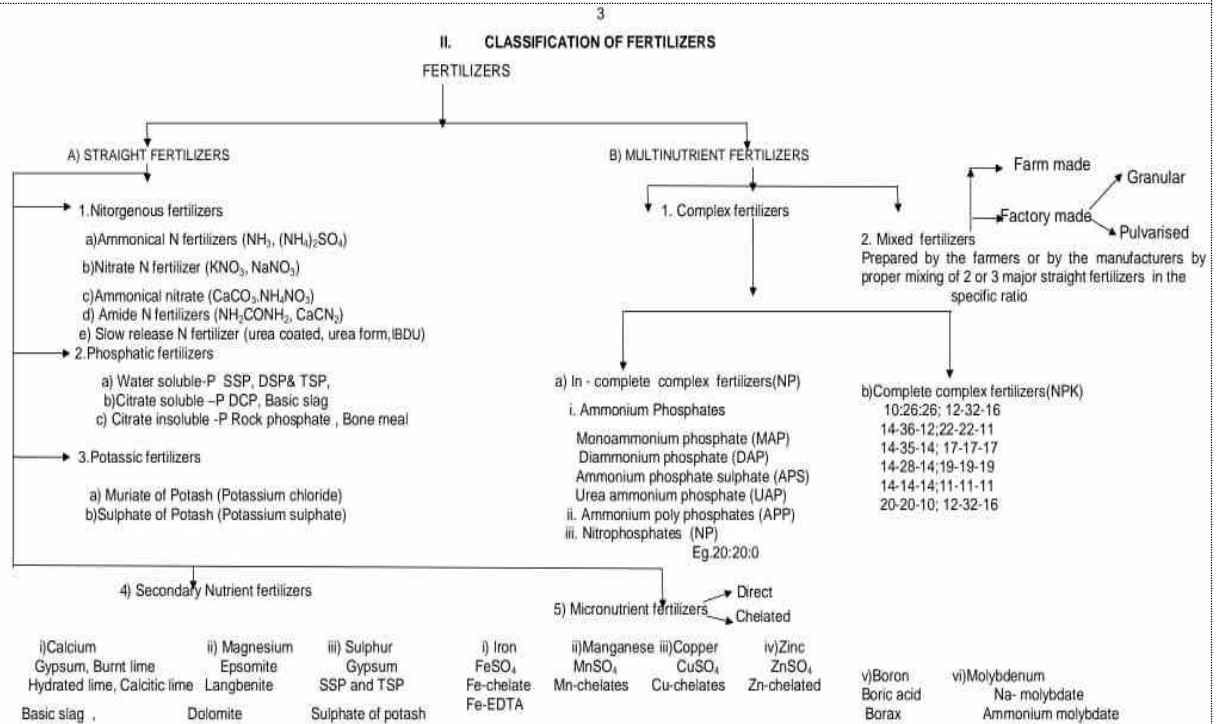


Fertilizer: A fertilizer can be defined as a mined or manufactured material containing one or more essential plant nutrients in potentially available forms in commercially valuable amounts.

Difference between manures and fertilizers

Manure	Fertilizer
Manure is a natural or an organic substance obtained by the decomposition of plant and animal wastes. This is done by microbes, earthworms, fungus etc.	Fertilizer is a synthetic substance or an inorganic compound. Fertilizers are artificially prepared in industries using various chemicals
Not nutrient specific-supply nutrients to soil but specific amount or type of nutrient is difficult to determine	Nutrient specific-Supply specific nutrients in specific quantities.
Bulky and voluminous, hence difficult to store.	Compact, use very less space and therefore easy to store.
Manure provides a lot of organic matter to the soil. It is slowly absorbed by the plants. It also improves soil texture and water holding capacity of the soil.	Fertilizer does not provide any humus to the soil. It is quickly absorbed by the plants. Fertilizers have no such effects on soil texture and water holding capacity of the soil.
Crop productivity is increased only to some certain extent. Manures are cheaper than fertilizers	Crop productivity is increased many folds by its use. They are expensive
No side effects of manure are absorbed.	Chemicals in fertilisers are washed away to the nearby water bodies, causing soil and water pollution.

Classification of fertilizers



Bulky organic manures

Definition: Bulky organic manures are those materials of plant and /or animal origin, which when added to the soil have tendency to decrease bulk density and to increase soil volume ,thus providing better physical conditions for plant growth especially in coarse textured soils and also provide essential nutrients in smaller quantities than the chemical fertilizers .

Characteristics of bulky organic manures:

1. Organic materials are relatively poorer in concentration of plant nutrients
2. These materials possess wider C:N ratio and C:S ratios and so supply energy needed for microorganisms
3. The mineral nutrients that are available in the organic materials become available to plants after mineralization.
4. Judicious combination of organic and inorganic manures is quite essential to maintain fertility status. Examples : FYM, Composts, Green manures, Poudrette, 5.Biogas slurry, Sewage or sludge, Molasses and Vermicompost

IFARM YARD MANURE (Cattle manure)

Definition: The physical composition of cattle manure is called Farm Yard Manure, which consists of dung and urine of cattle and the litter, a bedding material like hay, straw used for cattle Cattle manure is slow acting, bulky organic and however is a low analysis fertilizer, obtained from dung and urine of farm animals mixed with litter and other miscellaneous farm wastes.

II. Compost : Compost is a product of decomposition of plant and animal wastes with various additives .The compost had the largest variation of all organic material ranging from neglected garbage dumps to carefully composted and treated substances with high fertility. **Composting :** Composting is a process of converting organic matter in to manure in a short time by accelerating fermentation process under controlled conditions is called composting.

Methods of composting The process of composting were first initiated in England during the period of First World War (1914 -1918). The various systems of composting are

1. ADCO process (Agricultural Development Company)
2. Activated compost process
3. Indore process
4. Bangalore process
5. Coimbatore process
6. Rain -water compost
7. Rural compost
8. Urban compost
9. Vermicompost

III.Green manuring: Green manuring can be defined as the growth of a crop for the specific purpose of incorporating it into soil while green, or soon after maturity with a view to mproving the soil and benefiting subsequent crops or Practice of ploughing or turning in to the soil un decomposed green plant tissues for the purpose of improving physical condition as well as fertility of the soil

Objectives of green manuring:

- i. Increasing organic matter content of soil
- ii. Maintain and improve soil structure
- iii. Reduce the loss of nutrients , particularly nitrogen
- iv. Provide a source of nitrogen for the following crop
- v. Reduce the soil loss by erosion

Classification of Green manuring: classified into two groups as

- I. **Green manure in situ-** in this system, green manure crops are grown and buried in the same field which is to be green-manured, either as a pure crop or as intercrop with the main crop. This is most common green manure crops grown under this system are sunnhemp(*Crotalaria juncea*),daincha (*Sesabania aculeata*) , Pillipesera (*Phaseolus trilobus*) and guar (*Cyamopsis tetragonoloba*)
- II. **Green leaf manuring-** green leaf manuring refers to turning into the soil green leaves and tender twigs collected from shrubs and trees grown on bunds ,waste lands and near by forest areas. The common shrubs and trees used are Glyricidia , Sesbania speciosa , Karanj (*Pongamia pinnata*) etc., Plants used as a source of green leaf manure are *Aeschynomene aspera*, *Azolla filiculoidea*, *Azolla pinnata* , *Calotropis gigantean*, *Cassia auriculata*, *Cassia siamea*, *Cyamopsis tetragonoloba*

Note: This content has been prepared at home.