

S S - 519 manures and fertilizers

The word “Manure” is originated from the French word “MANOEUVRER” which refers to “work with soil” .The word Manure is also originate from Latin word “Manu” (hand) and operate(to work).

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” .

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.

Differences between manures and Fertilizers:

S.No.	MANURES	FERTILIZERS
1	Organic in nature	Inorganic in nature
2	Slow acting	Quick acting
3	Having low analytical value	Having high analytical value
4	Having no definite chemical composition	Having definite chemical composition
5	Obtained from plant , animal and human resources	Mined or manufactured
6	Improves physical properties of soils	Don't improve the physical properties of soils
7	Supply almost all major, minor and micronutrients.	Supply one or very few plant nutrients.
8	Derived from French word ‘MANOEUVRER’ to work with soil	Derived from Latin word Fertil (means Fertile)
9	Bulky in nature	Non-bulky in nature

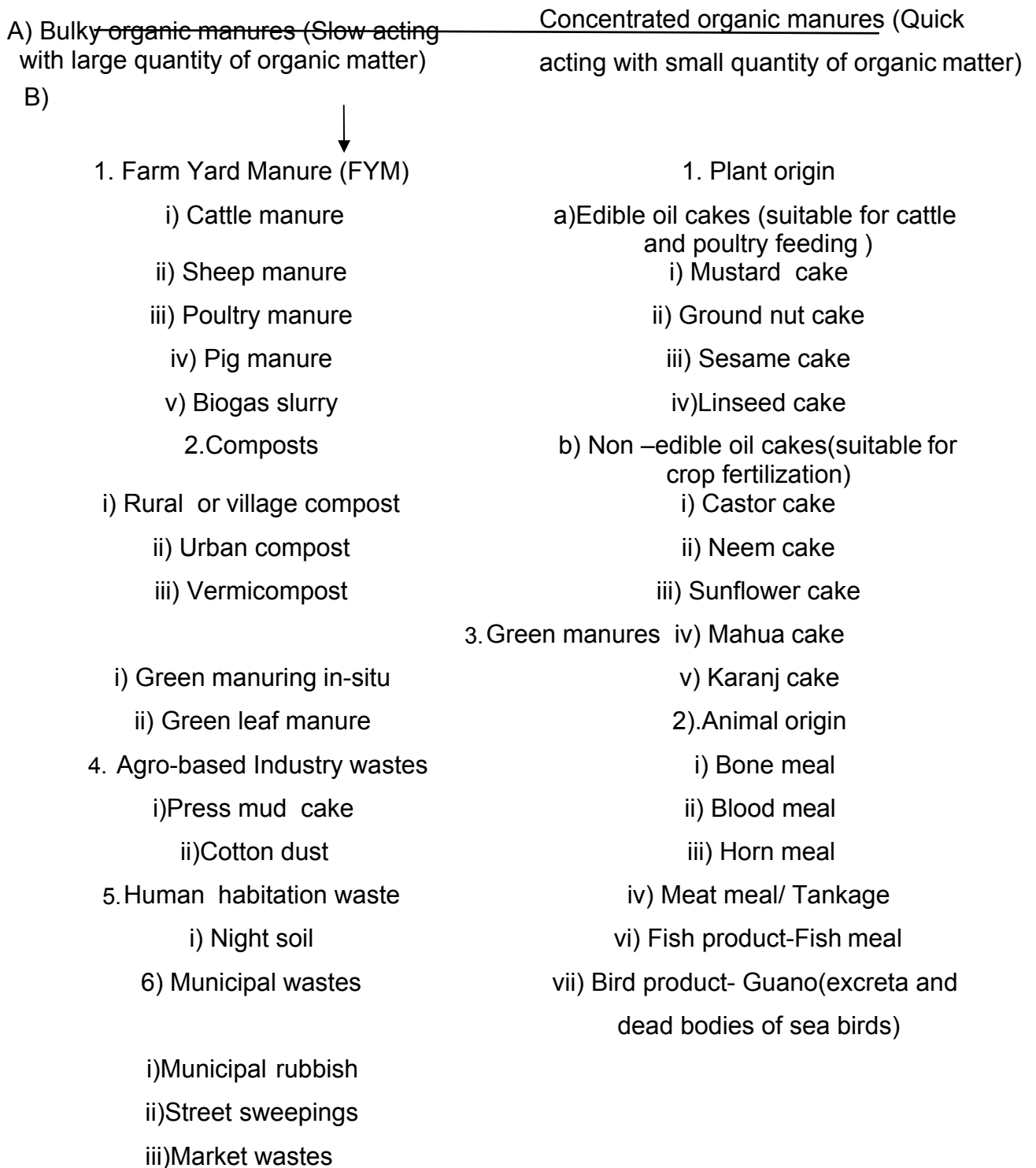
Manuring: Manuring is the process of increasing the productive capacity of land by adding plant foods to the soil in different forms.

Classification of Manures and fertilizers with examples

- I. Classification of Manures
- II. Classification of Fertilizers

I. Classification of Manures :

MANURES



II. CLASSIFICATION OF FERTILIZERS

FERTILIZERS



A) STRAIGHT FERTILIZERS

B) MULTINUTRIENT FERTILIZERS

Farm made

Granular

1. Nitrogenous fertilizers

2. Mixed ferti

a) Ammonical N fertilizers (NH_3 , $(\text{NH}_4)_2\text{SO}_4$)

1. Complex fertilizers

2. Mixed fertilizers



Pulvarised

b) Nitrate

c) Ammo

(CaCO_3 .

d) Amide

e) Slow r

form, IBDU

a) Wa

b) Cit

c) Citr

meal 3. P

a) Muri

b) Sulph

4)



Prepared by the farmers or by the manufacturers by

proper mixing of 2 or 3 major straight fertilizers
in the specific ratio

a) In - complete complex fertilizers(NP)

i. Ammonium Phosphates

Monoammonium phosphate (MAP) Diammonium phosphate (DAP) Ammonium phosphate sulphate (APS) Urea ammonium phosphate (UAP)

ii. Ammonium poly phosphates (APP)

iii. Nitrophosphates (NP)

Eg.20:20:0

Direct

b)Complete complex fertilizers(NPK)

10:26:26; 12-32-16

14-36-12;22-22-11

14-35-14; 17-17-17

14-28-14;19-19-19

14-14-14;11-11-11

20-20-10; 12-32-16

5) Micronutrient fertilizers

Chelated

i)Calcium

Gypsum, Burnt lime

Hydrated lime, Calcitic lime

Basic slag ,

ii) Magnesium

Epsomite

Langbenite

Dolomite

iii) Sulphur

Gypsum

SSP and TSP

Sulphate of potash

i) Iron

FeSO₄

Fe-chelate

Fe-EDTA

ii)Manganese iii)Copper

MnSO₄

Mn-chelates

CuSO₄

Cu-chelates

iv)Zinc

ZnSO₄

Zn-chelated

v)Boron

Boric acid

Borax

vi)Molybdenum

Na- molybdate

Ammonium molybdate

Role of manures in sustainable agriculture:

A) Bulky organic manures:

The bulky organic manures are organic in nature and required in huge amounts. All these bulky organic manures are bulky in nature and supply i) plant nutrients in small quantities and ii) organic matter in large quantities. Eg. FYM, Composts, Green manures, Sewage sludge. Of the various bulky organic manures FYM, Compost and Green manures are widely used. The effect of bulky organic manures on soils is three fold.

- I. Since these manures contain plant nutrients, they have direct effect on plant growth like any other commercial fertilizer. Bulky organic manures contain nutrients in small quantities, therefore large quantities of these are needed. Besides the major nutrients, they also contain traces of micro-nutrients
- II. Bulky organic manures increase organic matter content and hence improve the physical properties of soil. This effect is very important in case of most of our arable land. Such manures increase the humus content of soil and consequently water holding capacity of sandy soils also increased and the drainage of clayey soils is improved.
- III. Bulky organic manures provide food for soil microorganisms. This increases the activity of microbes which in turn help to convert unavailable plant nutrients into available form.

Organic manures have been the traditional means of improving soil fertility. The organic matter that is applied through organic manures has very complex effect on soil and on plant growth. The main effects are

Effect of organic matter on soil properties:

- I. Improvement of soil physical properties
 - 1) Improvement of soil structure
 - 2) Improvement of water holding capacity
 - 3) Improvement of soil aeration
 - 4) Reduction of soil loss through erosion
- II. Improvement of chemical properties
 - 1) Supply of essential plant nutrients in balanced ratio
 - 2) Slow release of nutrients
 - 3) High residual value
- III. Improvement of biological activity
 - 1) Stimulation of soil fauna and flora

B Concentrated organic manures:

Like bulky organic manures, these organic manures contain plant nutrients and considerable amount of organic matter. They have direct effect on plant growth. Nitrogen content is higher in concentrated organic manures and varied from 2.5 per cent in mahua cake to 7.9 per cent in decorticated safflower cake. In addition to nitrogen all the oil cakes contain P_2O_5 (0.8 to 2.9 %) and K_2O (1.2 to 2.2%) since they contain nitrogen in relatively large quantities ,they are usually classified as organic nitrogenous manures . By virtue of this high nitrogen content they enrich the nitrogen status of soil.



