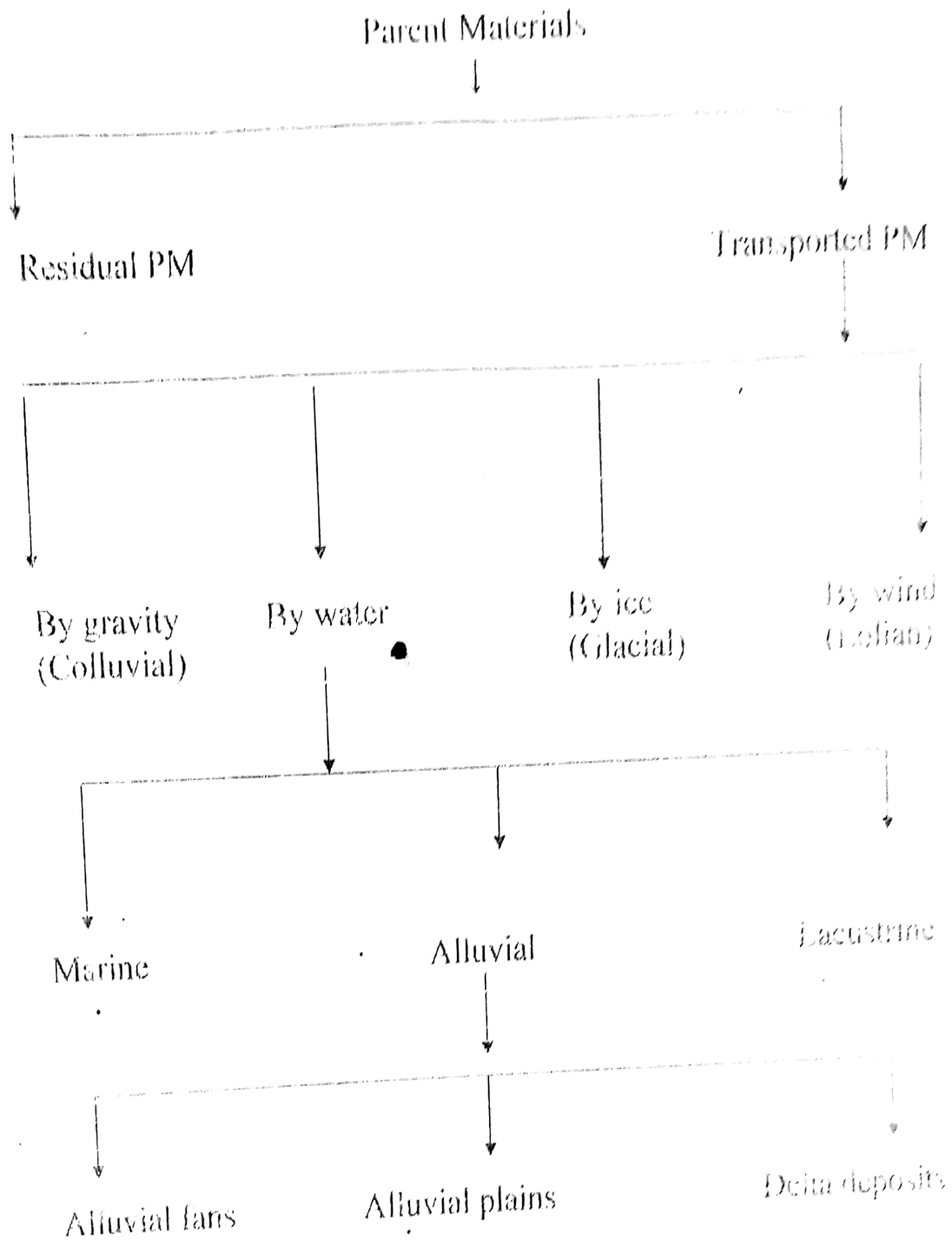


Classification of Parent Materials



Classification of Parent materials

1. The unconsolidated and more or less chemically weathered minerals or organic matter from which the solum of the earth is developed by pedogenic processes is called parent material.
2. The unconsolidated product of weathering from which soil develops is called parent material.

The nature and chemical composition of parent material influences.

- a. Both ^①chemical weathering and ^②natural vegetation e.g. presence of lime stone in parent material will slow acidity development.
- b. Parent material also influences the ^③quantity and type of clay minerals present in the soil profile. Hence the nature and properties of parent material together with the climate are the most important factors
- c. ^④Affecting the kind and quality of soil.

So to understand soils we must know their source and mechanism of weathering and transport.

Classification of Parent Materials

Two groups of inorganic parent materials are recognized: (a) *sedentary* (formed in place) and (b) *transported*, which may be subdivided according to the agencies of transportation and deposition.

1. **Sedentary/Residual** Still at original site

2. **Transported**

- a) By gravity (Colluvial)
- b) By water (Alluvial, Marine, Lacustrine)
- c) By ice (Glacial)
- d) By wind (Eolian)

Residual/sedentary Parent Material

It develops in place from weathering of underlying rocks. In landscapes it may be experienced long and possibly intense weathering.

1. In humid and warm climate, residual parent materials are thoroughly leached and oxidized and show red and yellow color of various oxidized iron compounds.
2. In cooler and dry climates color and chemical composition of residual parent materials tend to resemble more closely from rock from which it formed.
3. Residual materials are distributed on all continents.
4. A great variety of soils occupy the regions covered by residual debris because of marked differences in the nature of rocks from which these materials are evolved.

5. The varied soils are also a reflection of wide differences in other soil forming factors such as climate and vegetation.

✓ Colluvial Debris ^{Weal}

1. Colluvial debris or colluvium is made up to rock fragments detached from the heights above and carried down the slopes mostly by gravity through frost action,
2. Colluvial parent materials are frequently coarse and stony because physical weathering is dominated in this case.
3. Soils developed from the Colluvial material are generally not of great agricultural importance because of their small area, inaccessibility and unfavorable physical and chemical properties.
4. However some useful and grazing lands in every mountainous region have colluvial materials.


Alluvial Stream Deposits

These are 3 general classes of alluvial deposits


^{Fli} 1. **Flood Plains**

Stream commonly over flow their banks and flood the surrounding area. That part of valley which is inundated during floods is a flood plain. Sediments carried by swollen stream is deposited during the flood with coarse materials being laid down near the river channel and finer materials for there away. The ^{Soil} derived from the sediments are generally rich in nutrients but they may require drainage and protection from over flow. Equally productive soils are found on the floodplains of many countries. Some of these floodplains deposits are used for the wetland rice.

2. **Alluvial Fans**

 Stream that leaves a narrow valley in an upland area and suddenly descend to a much broader valley below deposit sediments in the slope of a fan. Fan material generally gravelly and stony somewhat porous and well drained. Alluvial fans are found over ~~found~~ large areas in mountains and hilly regions. Soils derived from this debris often prove very productive.

✓ 3. **Delta Deposits** ^{# sat.}

 Much of the finer sediments carried by streams is not deposited in the flood plains but is discharged into ^{lake} ~~lake~~ reservoir or ocean into which stream flows. Some of suspended material settles near the mouth of river forming a delta. Delta deposits are found very rare and are continuation of floodplains. It is clayey in nature.

A river delta is formed from deposition of sediments carried by a river leaves its mouth & enters slower moving standing water. This happens when river enters sea, ocean or lake etc.

Marine Sediments ✓

Much of the sediments carried away by streams eventually is deposited in oceans, lakes, seas and gulf. Courses fragment are deposited near the shore and finer particles at a distance. Over period of time the under water sediments build up and can become quite deep. These deposits are then subjected to weathering and to soil formation giving rise to valuable agricultural soils in some cases. Marine deposits are quite variable in texture. Some are sandy and other is high in clay with proper management and fertilization soils developed on some marine deposits are quite productive.

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Lacustrine Deposits

In many cases the ice front came to a standstill where there was no such ready escape for the water and ponding occurred as a result of damming action of the ice and ultimate large lakes were formed is called Lacustrine. Materials in lakes are deposited by water and wind from surrounding upland areas. So nature of the deposits is generally unleached and requires drainage before cultivation can be carried out.

Glacial Deposits

The name drift is applied to all materials of glacial origin; ^{whether} weather deposited by ice or by associated waters. Materials deposited directly by ice are called glacial till and are heterogeneous mixture.

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✓ Parent material transported by wind

Wind is capable of picking up large amount of material at one site and depositing at another. Parent materials transported by wind are classified as

1. Dune sand:

دھولے کی تھلے

Along the beaches of world's oceans and large ^{lakes} ~~lakes~~ and over vast barren deserts strong winds pick up medium and fine sand grains and pile them into hills of sand called dunes.

2. Loess

The wind blown material called loess is composed primarily of silt with very fine sand and coarse clay. Loess may be blown for hundreds of kilometers.

3. Aerosolic Dust

Very fine particles carried high into the air may travel for thousands of kilometers before being deposited usually with rain fall. These fine particles are called aerosolic dust because they can remain suspended in air due to their very small size.