

**FOR PART II HONS. GEOGRAPHY**

**MODULE 6; UNIT : 1 ; TOPIC : 1.2**

**ZONAL, AZONAL & INTRAZONAL SOILS -  
SOME BASIC CONCEPTS**



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# INTRODUCTION

## ZONAL SOILS :

Zonal soils are those soils formed along broad zones of the earth. They are very much in conformity with climate and natural vegetation such as Podzol, Chernozem and Laterite soils. They are mature soils i.e. have fully developed soil profiles with distinct horizons (A, B & C). They are very much in equilibrium with environmental conditions.

## INTRAZONAL SOILS :

Intrazonal soils are developed within the zonal soils. Because of certain local factors the type of soil is different from zonal soils eg. Alkali soils, peat soils i.e. hydromorphic soils. Because of heavy deposition of salt, the soil has been different.

## AZONAL SOILS :

Those soils which fail to develop mature soil profiles. These soils develop over flood plains, aeolian deserts, loessic areas, alluvial soils , skeletal soils at the foot of the mountains. . They are immatured soils due to lack of time in their soil forming process.

According to **Dokuchaev**, the classification of soils is as follows

### **Class A : Normal Soils (Zonal Soils )**

<b>ZONES</b>	<b>SOILS</b>
1. Boreal	Tundra
2. Taiga	Light Grey podzolised soils
3. Forest Steppe	Grey & dark grey soils
4. Steppe	Chernozem
5. Desert Steppe	Chestnut & Brown Soil
6. Desert Zone	Yellow soils and white soils.
7. Subtropical Zones or Tropical Forest	Laterite & Red Soils

### **Class B : Transitional Soils (Intrazonal Soils )**

<b>Name of the Soils</b>
1. Dryland Moor Soils
2. Moor Meadow Soils
3. Carbonate containing soils
4. Secondary Alkaline Soils

## Class C : Abnormal Soils (Azonal Soils )

Soil Name
1. Skeletal Soils
2. Alluvial Soils
3. Aeolian Soils
4. Glacial Soils
5. Coastal Soils

Eroded soils also fall under this class.

There are some defects in this system of soil classification which are as follows :

1. There is more emphasis on climate and vegetation in this system. Other factors have been overlooked.
2. This system is more biased on the colour of the soil.

However, inspite of these defects this is reasonable a good system of classification of soil .

There is another school of thought – American School of Thought who worked on Soil Classification . The principal worker is C.F Marbut. He was greatly influenced by Russian School of thought . However Marbut placed more emphasis on the morphological characteristics of soil i.e. physical and chemical properties of soil.

He classified the soils into six categories . In the highest category he further subdivided the soils into

1. Pedocal &
2. 2. Pedalfer

In Pedocal soils there is deposition of Ca at any depth of soil profile.  $\text{CaCO}_3$  is deposited in areas of low rainfall. Since he worked in America in the Western part of USA all soils were classified there as Pedocals.

Again in areas of deposition of iron and aluminium oxides, soils are called Pedalfers at any stage of the soil profile in areas of high rainfall. Eg. Laterite . In the eastern part of USA, Pedalfers are found.

In other stages of soil classification, Marbut used soil properties. But his system was not very much accepted.

Baldwin & Others have put forward another system of soil classification. They considered genetic system of soil classification. As put forward by Dokuchaev. Baldwin also considered the soil properties . Thus Baldwin mixed *zonality* concept of Dokuchaev and *Physical & chemical properties* concept of Marbut. Later on Baldwin and other's system was modified by Thorp & Smith . Thorp & Smith divided the soils into 3 classes as put forward by Dokuchaev . However, they also emphasized on the physical and chemical properties of soil.

ORDER	SUBORDER	GREAT SOIL GROUP
Zonal	1. Soil of the cold Zones	1. Tundra – developed at the Northern part of Asia where temperature is extremely low. Process of soil formation is Gleization i.e. developed under imperfect drainage conditions.
	2. Light coloured soils of the Arid Regions	<ol style="list-style-type: none"> <li>1. Seirozem – a type of saline soils</li> <li>2. Brown soils where the percentage of organic matter is slightly greater.</li> <li>3. Reddish Brown Soil</li> <li>4. Desert Soils</li> <li>5. Red Desert soils where sands have been oxidised.</li> </ol>

ORDER	SUBORDER	GREAT SOIL GROUP
Zonal	3. Dark coloured Soils of Semi-arid & Sub-humid & humid grasslands	<ol style="list-style-type: none"> <li>1. Chestnut Soils formed below the Steppe Zone but above the desert and semi-desert areas.</li> <li>2. Red Chestnut Soils where the soil particles are oxidized.</li> <li>3. Chernozem Soil in grasslands found in central part of Eurasia.</li> <li>4. Prairie Soils.</li> <li>5. Reddish Prairie Soils.</li> </ol>
	4. Soils of the Forest Grasslands	<ol style="list-style-type: none"> <li>1. Degraded Chernozam Soils</li> <li>2. Non-Clacic brown soils – since organic matter has decreased , no apprciable deposition of CaCo3.</li> </ol>
	5. Light coloured Podzolized Soils of the timbered region (Coniferous Forest Zone)	<ol style="list-style-type: none"> <li>1. 1. Podzol soils – the owod Podzol has been derived from a Russian Word ‘Zola’ meaning ash.</li> <li>2. Grey wooded or grey podzolized soils.</li> <li>3. Brown Podzolic Soil. (Podzol like soils)</li> <li>4. Brown Acid Soils.</li> <li>5. Grey Brown Podzolic Soils.</li> <li>6. Red Yellow Podzolic Soils.</li> </ol>

ORDER	SUBORDER	GREAT SOIL GROUP
Zonal	6. Lateritic Soils of forested warm temperate 7 Tropical Regions	<ol style="list-style-type: none"> <li>1. Reddish Brown Lateritic Soils.</li> <li>2. Yellowish Brown Lateritic Soils.</li> <li>3. Laterite Soils</li> </ol>
Intrazonal Soils	1. Halomorphic Soils (Saline & Alkaline) of imperfely drained arid zones and littoiral deposits	<ol style="list-style-type: none"> <li>1. Solonchak or saline soils.</li> <li>2. Solonetz Soil (partly leached solonchak)</li> <li>3. Saloth soil (type of saline soil).</li> </ol>
	2. Hydromorphic Soils of marshes , swamps & flat lands .	<ol style="list-style-type: none"> <li>1. Humic Gley Soils.</li> <li>2. Alpine Meadow soils. (under high elevation)</li> <li>3. Bog &amp; half Bog Soils</li> <li>4. Low humic Gley soils.</li> <li>5. Ground water Podzol(where ground water level is very close to the surface in Podzol areas )</li> <li>6. Ground water Laterite (where ground water level is very near the surface in tropucal and equatorial regions).</li> </ol>
	3. Calcimorphic Soils	<ol style="list-style-type: none"> <li>1. Brown Forest Soils (limestone area)</li> <li>2. Rendzina Soils (limestone region)</li> </ol>



ORDER	SUBORDER	GREAT SOIL GROUP
Azonal		<ol style="list-style-type: none"><li data-bbox="954 197 1611 239">1. Lithosols (formed on hard rock)</li><li data-bbox="954 247 1263 289">2. Alluvial Soils</li><li data-bbox="954 297 1263 339">3. Skeletal Soils</li><li data-bbox="954 347 1263 389">4. Aeolian Soils</li><li data-bbox="954 396 1315 439">5. Glacial Till Soils</li><li data-bbox="954 446 1257 489">6. Coastal Soils</li></ol>