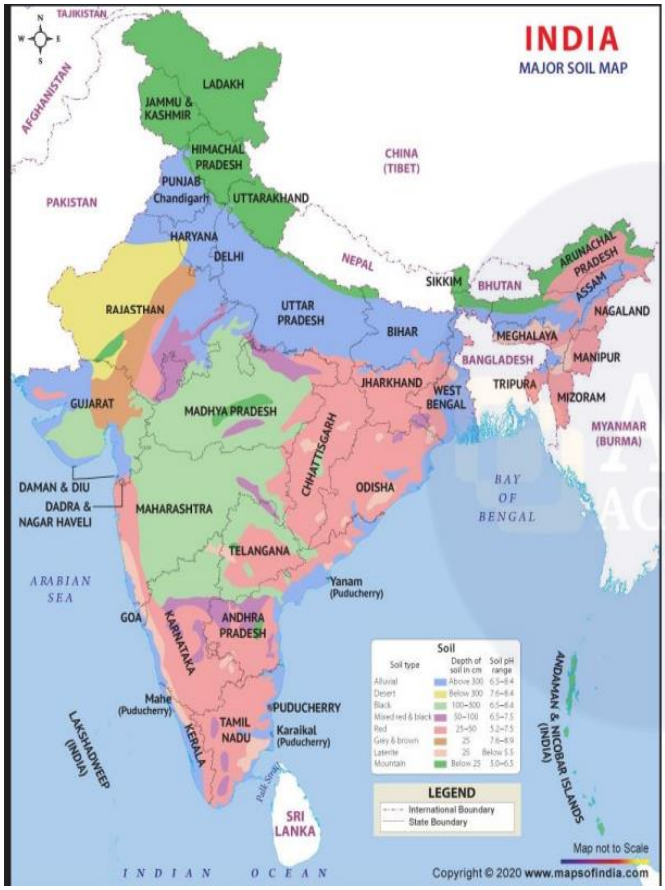
Soils of India:

India has a diverse range of soil types, owing to its varied climate, topography, and vegetation. Here are the major soil types found in India:



Soil Type	Area in Million Hectare	Percentage
Alluvial Soil	143.1	43.36
Red Soil	61.0	18.49
Black/Regur Soil	49.8	15.09
Mountain Soil	18.2	5.51
Red & Black Soil	17.8	5.40
Desert Soil	14.6	4.42
Laterite Soil	12.2	3.70
Grey and Brown Soil	3.6	1.09
Sub-montane Soil	5.7	1.73
Snowfield	4.0	1.21
Total	330.0	100

1. **Alluvial Soil**: It covers approximately 143.1 million sq. km, accounting for 43.4% of India's total reporting area. It is primarily found in the Satluj-Ganga-Brahmaputra Plains and extends into the Narmada and Tapi valleys, as well as the Eastern and Western coastal plains. Highly fertile and suitable for crops like rice, wheat, sugarcane, and cotton. Rich in humus, potash, phosphoric acid.

2. **Red Soil**: Red soils cover approximately 61 million hectares, which is about 18.5% of India's total reporting area. These soils are primarily found in the Peninsular region, stretching from Tamil Nadu in the south to Bundelkhand in the north, and from Rajmahal in the east to Kathiawad and Kutch in the west and formed due to the weathering of crystalline rocks and rich in iron and aluminum. Suitable for crops like pulses, groundnut, and cereals.

3. **Black or Regur Soil**: Black soils, also known as Regur soils (cotton soil) and internationally as 'tropical chernozems', form the third largest soil group

in India. They cover approximately 50 million hectares, accounting for 15% of the country's total reporting area. These soils originate from the weathered rocks of Cretaceous lava and are found predominantly in Gujarat, Maharashtra, western Madhya Pradesh, north-western Andhra Pradesh, Karnataka, Tamil Nadu, Rajasthan, Chhattisgarh, and Jharkhand, extending up to the Rajmahal Hills. Rich in clay and known for its water retention ability, making it ideal for cotton cultivation. High in iron, lime, calcium, and magnesium.

4. **Laterite Soil**: Laterite soils cover approximately 12.2 million hectares, accounting for 3.7% of India's total reporting area. These soils are primarily found in highland regions of plateaus and are most common in the hills of the Western Ghats, Eastern Ghats, Rajmahal Hills, Satpura, Vindhya ranges, Odisha, Chhattisgarh, Jharkhand, West Bengal, North Cachar Hills (Assam), and the Garo Hills (Meghalaya). Rich in iron and aluminum oxides but acidic in nature. Good for plantations like rice, ragi, sugarcane, cashew nut, etc.

5. **Desert Soil**: Desert soils cover approximately 15 million hectares, accounting for 4.42% of India's total reporting area. These soils develop under arid and semi-arid conditions and are primarily deposited by wind action. They are found mainly in Rajasthan (west of the Aravallis), northern Gujarat, Saurashtra, Kutch, western Haryana, and southwestern Punjab. Arid and sandy with low organic matter content. Suitable for growing drought-resistant crops like millet and barley.

6. **Mountain Soil**: Mountain soils cover approximately 18.2 million hectares, accounting for 5.5% of India's total reporting area. These soils are predominantly found in the valleys and hill slopes of the Himalayas at elevations ranging between 200 to 300 meters. They are also present in Assam, Darjeeling, Uttarakhand, Himachal Pradesh, and Jammu & Kashmir. Mountain soils contain minerals and organic matter, particularly in areas with dense forest cover. They support horticulture and fodder cultivation in many regions.

7. **Red and Black Soil**: Red and black soils are found in isolated patches in Bundelkhand, as well as east of the Aravallis in Rajasthan and Gujarat. These soils have developed over granite, gneiss, and quartzite from the Archaean and Pre-Cambrian periods. These soils exhibit characteristics of

both red and black soils depending on the parent rock material and climatic conditions. Suitable for maize,bajra, millet, pulses and oilseeds.

8. **Grey and brown Soil:** Grey and brown soils are primarily found in Rajasthan and Gujarat. These soils have developed through the weathering of granite, gneiss, and quartzite under dry climatic conditions. Their loose, friable texture allows for good drainage but limits compactness, with iron oxide giving them colors ranging from red to brown. Rich in iron oxide, these soils offer moderate drainage but are low in organic matter, nitrogen, and moisture retention. They require irrigation and fertilization for successful agriculture, supporting dryland crops and fodder farming in arid regions.

9. **Submontane Soil**: These soils are found in the Tarai region of the sub-montane stretching from Jammu and Kashmir to Assam in the form of a narrow belt. These soils have been formed by the deposition of the eroded material from the Shiwaliks and the Lesser Himalayas: The soil is fertile and supports the luxuriant growth of forests. The clearing of forests for agricultural purposes has made this area highly susceptible to soil erosion.

10. **Snowfields:** Snowfields in India, found in the Greater Himalayas, Karakoram, Ladakh, and Zaskar ranges, have immature, undeveloped soils that remain frozen most of the year, limiting biological activity. These regions are rich in glacial deposits and mineral-rich sediments, which contribute to fertility in lower valleys. However, due to extreme cold, lack of organic matter, and poor moisture retention, they are unsuitable for agriculture.

11. **Saline and alkaline Soil**: Saline and alkaline soils are commonly found in Rajasthan, Haryana, Punjab, Uttar Pradesh, Bihar, and Maharashtra These soils develop due to the accumulation of sodium chloride and sodium sulfate and are particularly common in arid and semi-arid regions where evaporation exceeds precipitation.
12. **Peaty and marshy Soils**: Peaty and marshy soils are found in high-rainfall, poorly drained areas like Kerala's Kottayam and Alappuzha districts, the Sundarbans, and river deltas. Rich in organic matter but highly saline, they require proper drainage and soil amendments for cultivation. They are mainly used for rice farming and other wetland crops.

13. **Karewa Soils:** Karewa soils are lacustrine deposits found mainly in the Kashmir and Bhadarwah Valleys. They are rich in organic matter and minerals, supporting high-value crops like saffron, almonds, and apples. Formed from ancient lake sediments, these soils have been shaped by geological processes over time**.**