Soil Fertility

Soil is mixture of rock debris and organic materials which develop on earth's surface. Components of the soil are mineral particles, humus, water and air. Different types of rocks as Archien, Dharwad, Gondwana series played very significant role in soil formation of state. Except Alluvial soil all other soils are residual

Jharkhand Soil

TYPES	Characteristics
Red Soil	
Mica "	- Low fertility
Black "	- sheet erosion
Laterite " [least fertile]	- Leaching
Sandy "	- acidicity pH [4.5-5.5]
Alluvial Soil	-

Soil fertility status of Jharkhand

* Nutrient status

Severe deficiency especially 'Tand' soil.

↳ Phosphorus - deficient in 66% of area. especially Gumla, ES, Simdega, SK, WS → 80% deficient

↳ Sulphur - 35% of area has deficiency

↳ deficient in 60-80% → WS, Latehar, Lohardaga

↳ Potassium - deficiency in 750% area

↳ Dhanbad has lowest %

↳ Koderma, Latehar, Deoghar, Dumka good presence.

↳ **Nitrogen** – low to medium in 70% of area
↳ Lohardaga & Simdega much deficiency

Carbon – good amount due to Gondwana rocks. In around 47% of area.

* **Micronutrients.**

↳ Boron – deficient in 45% area. Palamu, Garhwa, Latehar, SK, ES

↳ Copper – deficient in 4% of area.

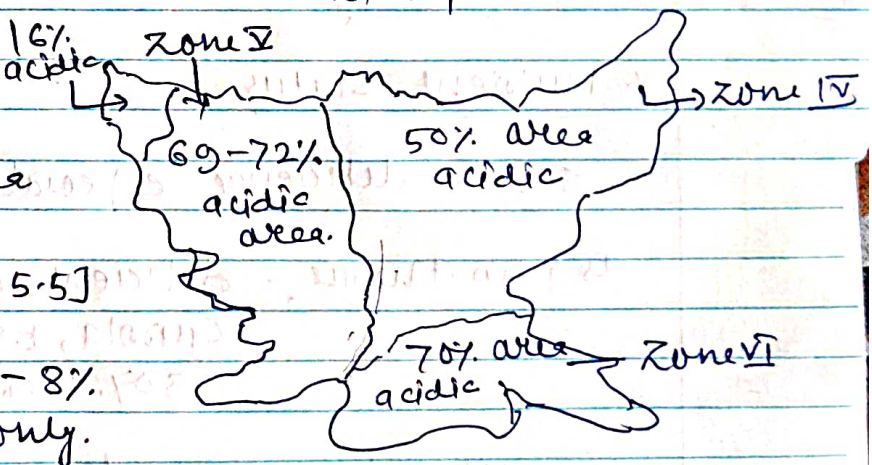
↳ Zinc – deficient in 7% of area.

↳ Iron & Mangnese – abundance due to Metal presence.

* **Acidity**

49% of area highly acidic [pH – 4.5 – 5.5]

Neutral soil – 8% only.



* **United states department of Agriculture Status. [USDA]**

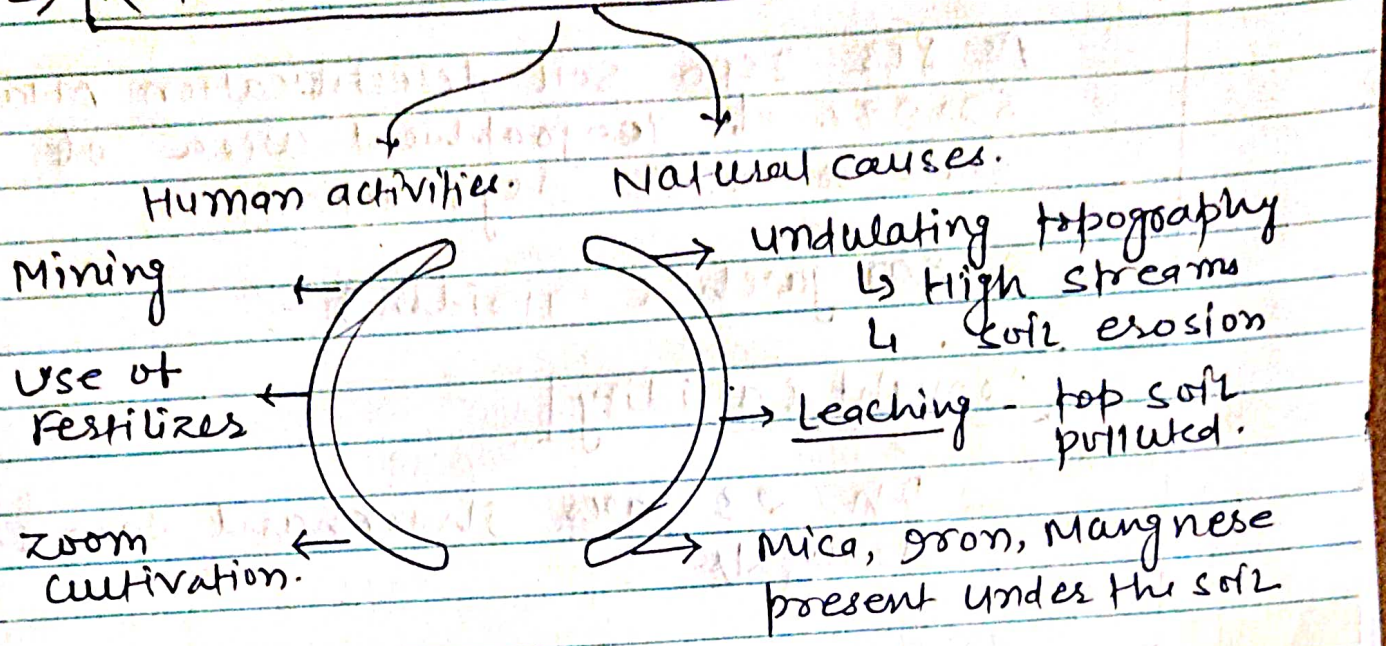
Albisols – 54% of TGA. Alt iron ↑.

Inceptisols – 24% of TGA – second dominated

Entisols – 19% of TGA. recently formed

Vertisols – only in Pakur [0.6%]
↳ fertile ↑ – Alluvial soil

⇒ **Reasons for low fertility**



* ~~Natural causes~~

Undulating topography - due to plateau region streams flow through high slope. much sideward erosion.

NITI Aayog 2015 → undulating topography and rainfed agriculture is responsible for massive soil degradation

Mining activities

Mines and mines based industries are cause to state soil pollution
eg Dhanbad → coal
Jadugoda → Uranium
Singhbhoom → iron / copper

Mines → flow of waste → **Soil pollution**

Leaching - High use of pesticides and fertilizers causes leaching of top soil

Desertification

As Per ISRO soil desertification Atlas 69.98% of geographical area of the state is under degradation.

Ramgarh & Giridih ↑

Drought & aridity

In 23 years Jharkhand saw 10 droughts.

Soil erosion status

74% → Sheet erosion
18% → Gully erosion
2.1% → mining
} Reason for erosion of top soil

⇒ Impact of soil degradation

- Low fertility
- Biodiversity loss, beneficial pathogens
- Low soil's retaining capacity
- Change in soil profile → fertility ↓

⇒ Government initiatives for soil fertility

*Soil Health Card – First state to distribute
It enables us to check soil moisture, nutrient status and use optimal fertilizers.

* Jharkhand agriculture & Soil Management [JASMINE]
  ↳ quality training & capacity building of all stake holders.

* organic Farming Authority of Jharkhand [OFAJ]
  encourage organic farming in state.
  eg Farm Manures, Govardhan Nayay Yojana, Mamami Ganga program
  ↓
  78 villages at Sahebganj

* Paramparagat Krishi Vikas yojana
  to encourage organic farming by subsiding inputs.

* Neem Coated Urea - slow release of nitrogen

* Research @ SAMETI, BAU Ranchi

⇒ way forward
  ↳ Checking shifting cultivation - NE part
  ↳ Vermiculture - organic farm manures.
  ↳ Waste to fertilizer - eg BLT Sindri
  ↳ Aquaponics - Fish farming & Plantation on same land unit
  ↳ Research centers @ districts
    ↳ Awareness programs.

Around 75% of the people of our state obtain livelihood from farm and allied activities. Soil in Jharkhand is less fertile and degradation, human exploitation making the situation less complex. on an average state losses 1 - 10 ton soil / hectare per year. With the initiatives of govt. as Dobha construction, Soil Card scheme, encouraging organic farming are new hopes. People at field level also should be responsible to prevent leaching.