



## Global Status of Black Soils: FAO

**For Prelims:** FAO, World Soil Day, SOC, Initiatives to improve Soil Health.

**For mains:** Global Status of Black Soils, Significance of Black Soil.

### Why in News?

The [Food and Agriculture Organization \(FAO\)](#) marked [World Soil Day 2022 \(5<sup>th</sup> December\)](#) with the launch of its first **Global Status on Black Soils**, which are at greater risk than ever due to the climate crisis, biodiversity loss and land use change.

### What are the Findings?

#### ▪ Significance of Black Soil:

- The ability of the soils to remove carbon from the atmosphere and lock it up in soil organic matter (called **carbon sequestration**) has been proposed as an important solution to mitigate human-induced climate change.
- The inherent fertility of the soils **makes them the food basket for many countries and are considered essential** to the global food supply.
- Black soils have the **potential to provide 10% of the total Soil Organic Carbon (SOC) sequestration globally** if they receive proper attention.
  - Europe and Eurasia have the **highest potential at over 65%** and Latin America and the Caribbean at around 10%.
- Black soils were home to 2.86% of the global population and had 17.36% of cropland, 8.05% of global SOC stock and 30.06% SOC stock of global cropland.
- However, despite representing a small portion of the world's soils, **black soils were key for food security** and the global economy.
  - Globally in 2010, 66% of sunflower seeds, 51% of small millet, 42% of sugar beet, 30% of wheat and 26% of potatoes were harvested from black soils.

#### ▪ Status of Black Soils:

- Black soils are quickly **losing their SOC stocks**. They have lost 20 to 50% of their original SOC stock, with the carbon being released into the atmosphere mostly as **carbon dioxide**, **exacerbating global warming**.

#### ▪ Causes of Losses in Black Soil:

- Land-use change, unsustainable management practices and excessive use of agrochemicals are to blame.
- Most of the black soils suffered from **moderate to severe erosion processes**, as well as nutrient imbalances, acidification and biodiversity loss.

#### ▪ Food and Fertilizer Crisis:

- Smallholder farmers, particularly from vulnerable countries across Africa, Latin America and Asia, **lack access to organic and inorganic fertilizers** and are currently facing a 300% increase in fertilizer prices.
- Today, reduced availability and soaring fertilizer prices are driving increased food prices and food insecurity.

### ▪ **Suggestions:**

- Preserving natural vegetation on black soils such as grasslands, forests and wetlands and adopting sustainable soil management approaches on cropped black soils are needed.
- There is a need to work together to **produce safe, nutritious and micronutrient-rich food in a sustainable way** that avoids soil degradation, reduces greenhouse gas emissions and decreases agrifood systems pollution."

## What is Black Soil?

- Black soils are characterised by a **thick, dark-coloured soil horizon rich in organic matter**.
  - They are found in Russia (327 million hectares), Kazakhstan (108 M ha), China (50 M ha), Argentina, Mongolia, Ukraine etc.
- Black soils are extremely **fertile and can produce high agricultural yields** due to their elevated moisture storage capacity.
- Black soils are **rich in iron, lime, calcium, potassium, aluminum and magnesium but deficient in nitrogen, phosphorous**.
- They constitute 5.6 % of global soils and contain 8.2 % of the world's **SOC stocks**, approximately **56 billion tonnes of carbon**.
  - Soil organic carbon is **a measurable component of soil organic matter**, which makes up just **2-10% of most soil's mass and has an important role in the physical, chemical and biological function** of agricultural soils.
  - SOC refers **only to the carbon component** of organic compounds.
- This signifies their importance for climate change mitigation and adaptation.
- With their inherent fertility, they are **the food basket for many countries and are considered essential to the [global food supply](#)**.

## What is World Soil Day (WSD)?

- It was recommended by the **International Union of Soil Sciences (IUSS) in 2002**.
- The **FAO** has supported the formal establishment of WSD as a global awareness-raising platform under the leadership of the Kingdom of Thailand within the framework of the Global Soil Partnership.
- 5<sup>th</sup> December 2014 was designated as the first official WSD by the **[UN General Assembly \(UNGA\)](#)**.
  - The day was chosen because it corresponds with the official birthday of H.M. King Bhumibol Adulyadej, the King of Thailand, who officially sanctioned the event.
- World Soil Day **enjoins individuals to consider sustainably managing soil resources**. The main goal of the day is to increase public awareness of the significant environmental issues that soil degradation can lead to, such as erosion, the loss of organic matter, and a drop in soil fertility.
- The **theme** for World Soil Day 2022 is "Soils, where food begins".

## What are the Initiatives to Improve Soil Health?

- **[Soil Health Card Scheme](#)**
- **[Organic Farming](#)**
- **[Paramparagat Krishi Vikas Yojana](#)**
- **[Fertilizer Self-Sufficiency](#)**
- **[Digital Agriculture](#)**
- **[Carbon Farming](#)**
- The Nutrient Based Subsidy (NBS) Scheme

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. The black cotton soil of India has been formed due to the weathering of

- (a) brown forest soil
- (b) fissure volcanic rock
- (c) granite and schist
- (d) shale and limestone

**Ans: (b)**

**Exp:**

- Black soil, also known as regur soil or black cotton soil, is ideal for growing cotton. The climatic conditions along with the parent rock material are the important factors for the formation of black soil. Black soil is typical of the Deccan trap (Basalt) region spread over northwest Deccan plateau and is made up of lava flows (fissure volcanic rock).
- The Deccan Plateau includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu. Black soil also covers upper reaches of the Godavari and the Krishna, and the north Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu.
- Chemically, the black soils are rich in lime, iron, magnesia and alumina. They also contain potash. But they lack phosphorus, nitrogen and organic matter. The colour of the soil ranges from deep black to grey.
- **Therefore, option (b) is the correct answer.**

**Source: DTE**

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