



Initiatives to Promote Sustainable Agriculture

For Prelims: Krishi Sakhi Convergence Programme, School Soil Health Programme, Geographic Information System, [Soil Health Card](#), [NABARD](#), [National Mission of Natural Farming](#)

For Mains: Sustainable Agriculture, Government policies and interventions for development in various sectors and issues arising out of their design and implementation

[Source: PIB](#)

Why in News?

In a significant stride towards revolutionising the agricultural sector and promoting sustainable farming practices, the Union Minister for Agriculture & Farmers and Union Minister for Rural Development jointly inaugurated four key initiatives in New Delhi.

- These initiatives, including the **Revamped Soil Health Card Portal & Mobile Application, School Soil Health Programme, Krishi Sakhi Convergence Programme (KSCP), and CFQCTI Portal for Fertilizer Sample Testing**, hold the promise of transforming the agricultural landscape of the country.

What are the Inaugurated Initiatives for Soil Health Management?

- **Revamped Soil Health Card Portal and Mobile Application:**
 - The [Soil Health Card](#) portal has been revamped and a mobile application has been introduced for soil sample collection and testing. The portal includes a **registry of soil labs with real-time status** and geo-coordinates mapping.
 - It also provides **real-time data on soil sample collection**, lab testing, and Soil Health Card generation.
 - The new portal features a centralised dashboard at national, state, and district levels, as well as [Geographic Information System \(GIS\) analytics](#).
 - The portal also includes features such as fertilizer management, a nutrient dashboard, and heat maps of nutrients.
 - The initiative allows for real-time monitoring of progress, automatic capture of geo-coordinates during sample collection, and registration of plot details.
- **School Soil Health Programme:**
 - The **Department of Agriculture & Farmers' Welfare (DA&FW)** in collaboration with the **Department of School Education and Literacy**, initiated a pilot project. This project involved the establishment of **20 soil laboratories in rural Kendriya and Navodaya Vidyalaya schools**.
 - Study modules and training were provided to students and teachers. A mobile application was customised for the school program, and the portal has a dedicated section for the program to document all student activities.
 - Under this program **school students will collect soil samples, and test them in school labs, and create Soil Health Cards**.

- Students educate farmers on Soil Health Card recommendations, fostering critical thinking and practical learning.
- The **Soil Lab Programme** also aims to instil a sense of responsibility and respect for the environment in students, teaching them about [sustainable agriculture](#) and the impact of human activities on soil health.
- Now, this programme has been **scaled up in 1000 schools**. Kendriya Vidyalaya, Navodaya Vidyalaya and Eklavya Model Schools have been taken under this programme.
 - The DA&FW, in collaboration with the [National Bank for Agriculture and Rural Development \(NABARD\)](#), will set up soil labs in these schools.
- **Krishi Sakhi Convergence Programme (KSCP):**
 - A MoU between the **Ministry of Agriculture & Farmer Welfare and the Ministry of Rural Development** initiated the **KSCP**, which aims to transform rural India through the empowerment of Krishi Sakhi.
 - The programme includes a **Krishi Sakhis Training Programme** to certify 70,000 Krishi Sakhis as "**Para-Extension Workers.**"
 - Krishi Sakhis are practising farmers and trained para-extension professionals. They serve as farmers' friends, guiding [Natural Farming](#) and **Soil Health Management**.
 - Krishi Sakhis play a pivotal role in implementing various schemes such as the [National Mission of Natural Farming \(NMNF\)](#) and the [Pradhan Mantri Fasal Bima Yojana \(PMFBY\)](#).
 - Certified Krishi Sakhis act as para-extension workers, facilitating awareness creation and capacity building among farmers.
 - They serve as a **link between farmers**, [Krishi Vigyan Kendras \(KVKs\)](#), and the Agriculture and Allied Departments.
 - **Krishi Sakhis** receive training in agroecology, natural resource management, crop diversity, and health and nutritional security.
 - They conduct awareness generation meetings on topics such as natural farming and soil health management.
 - The programme has trained close to **3500 Krishi Sakhis** and is being implemented in 13 states, contributing to sustainable agriculture and rural development.
 - Krishi Sakhis serve as catalysts for transformation, nurturing sustainable agriculture and reshaping rural India.
- **CFQCTI Portal:**
 - The Central Fertilizer Quality Control and Training Institutes' (CFQCTI's) portal introduces facilities for **sample collection and testing, ensuring quality control in fertilizer management**.
 - The portal facilitates the generation of OTP for sample verification, automatic allocation to labs, and issuance of analysis reports, streamlining the process of quality assessment.

What Impact Do These Initiatives Envisage?

- **Promotion of Sustainable Agricultural Practices:**
 - These initiatives aim to promote sustainable agricultural practices, such as organic farming, to ensure **long-term environmental and economic benefits**.
- **Enhancement of Farmer Livelihoods:**
 - By addressing concerns related to soil health, fertilizer quality, and agricultural sustainability, these initiatives seek to **enhance farmer livelihoods and improve their economic well-being**.
- **Credibility of Organic Farming:**
 - Efforts to **enhance the credibility of organic farming** through initiatives like the Soil Health Card Portal and Krishi Sakhi Convergence Programme are expected to boost confidence in organic products and encourage their adoption.
- **Quality and Efficacy of Fertilizers:**
 - Initiatives to address concerns related to the quality and **efficacy of fertilizers**, as seen in the CFQCTI Portal, aim to safeguard the interests of farmers by ensuring the use of reliable inputs.

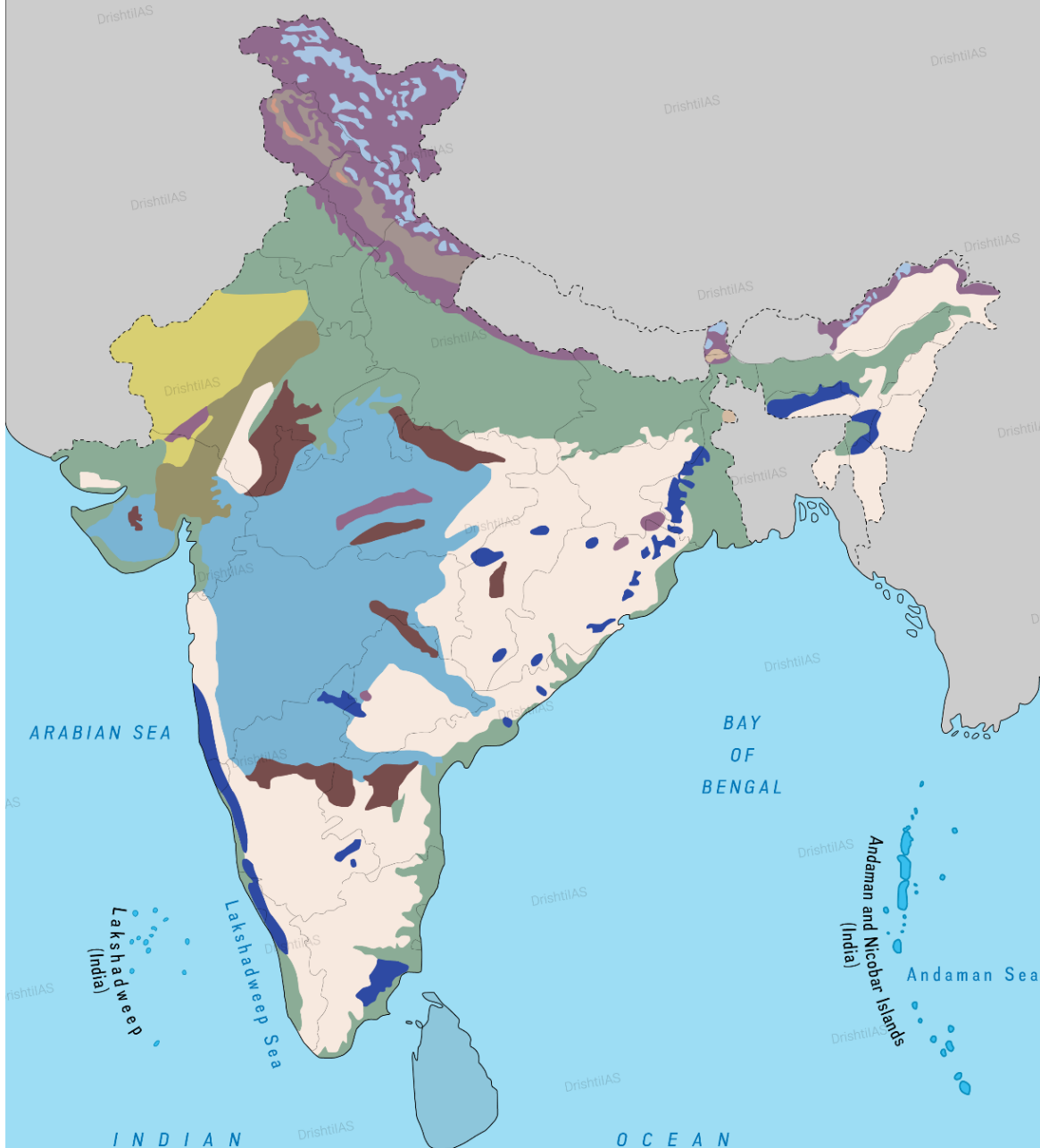
What are the Concerns Regarding Soil Health in India?

- Soil and water are fundamental resources for sustenance, with over **95% of food originating from them.**
 - The symbiotic connection between soil and water is crucial for agricultural systems and for achieving the [United Nations Agenda 2030](#).
 - Current climatic changes and human activities are exerting excessive pressure on soil and water resources.
- In India, **around 50% of the country's net sown area is rainfed**, contributing to 40% of total food production.
- Soil health in India faces challenges such as **low nutrient levels, with an average soil organic carbon (SOC) of around 0.54%.**
- **Land degradation** is a significant issue, with about **30% of the total geographical area affected**, leading to deficiencies in plant nutrients and impacting nutrition intake among the population.
- Nutrient depletions and deficiencies, along with inappropriate fertiliser application, result in declining productivity.
 - Sustainable food production requires practices like adequate replenishment of nutrients, tailored fertiliser applications based on soil analyses, and increasing organic content in soil.
- India loses an estimated **3 billion tonnes of soil annually due to water and wind erosion.**

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Types of Soil in India



Alluvial Soil (29.55%)	In the Upper and Middle Ganga plain, two different types of alluvial soils have developed, viz. Khadar and Bhengar.
Black Soil (19.62%)	It is also known as 'Regur Soil' or the 'Black Cotton Soil'.
Red Soil (19.62%)	The soil develops a reddish colour due to a wide diffusion of iron in crystalline and metamorphic rocks. It looks yellow when it occurs in a hydrated form.
Desert Soil (14.02%)	They are generally sandy in structure and saline in nature.
Laterite Soil (4.77%)	Laterites are not suitable for cultivation. Thus, are widely cut as bricks for use in house construction.
Mountain Soil	It is also known as 'Forest Soil'. They are loamy and silty on valley sides and coarse-grained in the upper slopes.
Snowfields	This soil is found under the snow and glaciers at the highest peak of the greater Himalayas, Karakoram, Ladakh, and Zaskar.
Grey and Brown Soil	Submontane Soil Red and Black Soil

Other Initiatives Related to Conserving Soil

- **Five-Pronged Programme of Soil Conservation:**
 - India's five-pronged strategy for soil conservation which includes making soil chemical-free, saving soil biodiversity, enhancing soil organic matter, maintaining soil moisture, mitigating soil degradation, and preventing soil erosion.
- **Soil Health Card scheme:**
 - The government of India's Soil Health Card scheme, launched in 2015, **displays soil health indicators and associated descriptive terms**, which guide farmers in making necessary soil amendments.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q1. 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)

Q2. Which of the following statements regarding laterite soils of India are correct? (2013)

1. They are generally red in colour.
2. They are rich in nitrogen and potash.
3. They are well-developed in Rajasthan and UP.
4. Tapioca and cashew nuts grow well on these soils.

Select the correct answer using the codes given below:

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 1 and 4
- (d) 2 and 3 only

Ans: (c)

Mains:

Q.1 How is science interwoven deeply with our lives? What are the striking changes in agriculture triggered off by science-based technologies? **(2020)**

Q.2 Sikkim is the first 'Organic State' in India. What are the ecological and economical benefits of Organic State? **(2018)**

Q. How far is Integrated Farming System (IFS) helpful in sustaining agricultural production? **(2019)**

