



## CARBON FARMING - GS III MAINS

Q. What is carbon farming? How does it help in mitigating the effects of climate change in the Indian context? (10 marks, 150 words)

**News:** *What is carbon farming? | Explained*

### What's in the news?

- The goal of carbon farming is to mitigate climate change by reducing the amount of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases in the atmosphere.

### Carbon Farming:

- Carbon farming is a holistic approach to agriculture that focuses on sequestering atmospheric carbon dioxide (CO<sub>2</sub>) into the soil and vegetation, thereby mitigating climate change while simultaneously enhancing soil health and agricultural productivity.

### Practices in Carbon Farming:

- It involves implementing regenerative agricultural practices that promote carbon sequestration, such as agroforestry, cover cropping, rotational grazing, conservation tillage, composting, and diverse crop rotations.

### Significance of Carbon Farming:

#### 1. Mitigation of Climate Change:

- Carbon farming practices such as rotational grazing, agroforestry, conservation agriculture, and integrated nutrient management help sequester atmospheric carbon dioxide into the soil and vegetation, thereby mitigating climate change by reducing greenhouse gas emissions and enhancing carbon storage.

#### 2. Soil Health Improvement:

- Carbon farming enhances soil health by increasing soil organic carbon levels, improving soil structure, fertility, water retention, and resilience to drought and extreme weather events.
- Practices like zero tillage, cover cropping, and crop residue management minimize soil disturbance and enhance organic content.

#### 3. Biodiversity Conservation:

- Agroforestry, agroecology, and land restoration practices promote biodiversity conservation by diversifying plant and animal species, providing habitat for wildlife, and restoring degraded ecosystems.

#### 4. Sustainable Agriculture:



- Carbon farming promotes sustainable agricultural practices by minimizing environmental impacts, conserving natural resources, and enhancing the long-term productivity and resilience of agricultural systems.

## Challenges in Carbon farming:

### 1. Water Availability:

- Carbon farming can be challenging in hot and dry areas.
- Limited water availability can hinder plant growth and restrict the potential for carbon sequestration through photosynthesis, affecting practices like cover cropping.

### 2. Plant Selection:

- The selection of plant species is crucial, as not all species trap and store carbon in the same amounts or equally effectively.
- Fast-growing trees and deep-rooted perennial grasses are generally better at carbon sequestration, but may not be suitable for arid environments.

### 3. Financial Resources:

- Small-scale farmers in developing countries may particularly lack the resources to invest in sustainable land management practices and environmental services.

### 4. Policy Support:

- Sufficient policy support is essential for the widespread adoption of carbon farming practices.
- This includes incentives, subsidies, regulations, and technical assistance to encourage and facilitate the implementation of carbon farming at the local, national, and international levels.

## Global Carbon Farming Schemes:

### 1. Voluntary Carbon Markets:

- Carbon trading in the agriculture sector has gained importance globally, especially in countries like the U.S., Australia, New Zealand, and Canada.
- Voluntary carbon markets, such as the Chicago Climate Exchange, provide platforms for incentivizing carbon mitigation activities in agriculture.

### 2. Kenya's Agricultural Carbon Project:

- Supported by the World Bank, Kenya's Agricultural Carbon Project exemplifies efforts to address climate mitigation, adaptation, and food security challenges in economically developing countries through carbon farming initiatives.

### 3. '4 per 1000' Initiative:

- Launched during the COP21 climate talks in 2015 in Paris, the '4 per 1000' initiative emphasizes the role of carbon sinks, including those created through carbon farming practices, in mitigating greenhouse gas emissions.



- It underscores the importance of managing the remaining global carbon budget wisely.

## Opportunities for the Indian Government:

### 1. Viability of Organic Farming:

- Grassroots initiatives and agrarian research in India demonstrate the viability of organic farming to sequester carbon.
- Agroecological practices have the potential to generate significant economic benefits, estimated at \$63 billion in value from approximately 170 million hectares of arable land.

### 2. Economic Benefits for Farmers:

- Adoption of sustainable agricultural practices could lead to economic benefits for farmers, including an estimated annual payment of around ₹5,000-6,000 per acre for providing climate services through carbon farming.

### 3. Suitability of Agricultural Regions:

- Regions with extensive agricultural land, such as the Indo-Gangetic plains and the Deccan Plateau, are well-suited to adopt carbon farming practices.
- These regions have the potential to contribute significantly to carbon sequestration and climate mitigation efforts.

## Way Forward:

### 1. Research and Development:

- Invest in research and development to identify and promote plant species that are well-suited for carbon sequestration.
- Develop drought-resistant crops and agroforestry species to enhance carbon farming viability.

### 2. Financial Support:

- Provide Financial assistance and incentives to small-scale farmers in developing countries to invest in sustainable land management practices and adopt carbon farming techniques.

### 3. Policy Framework:

- Develop and implement supportive policy frameworks at local, national, and international levels to encourage the adoption of carbon farming practices.
- For example - setting carbon pricing mechanisms, establishing regulatory standards, and providing technical assistance to farmers.