



Regenerative Agriculture

Prelims: Regenerative Agriculture, Soil Degradation, Zero-budget natural farming, National Project on Organic Farming.

Mains: Regenerative Agriculture and its Significance.

Why in News?

Farmers in Madhya Pradesh who follow regenerative farming methods find that they reduce the need for frequent irrigation, which conserves water and energy.

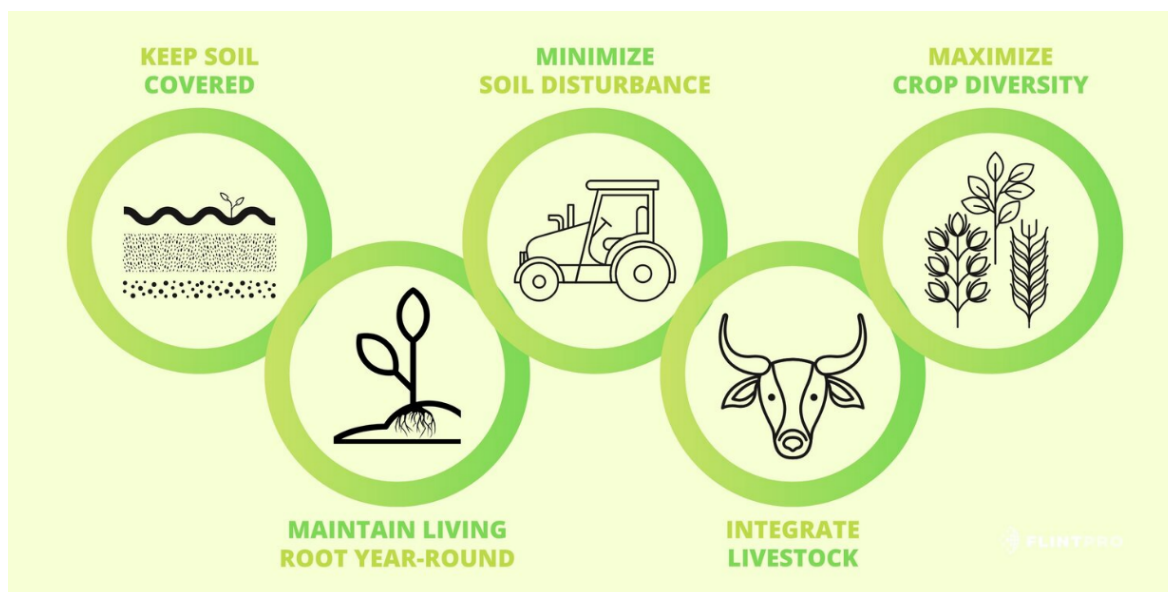
What is Regenerative Agriculture?

▪ Background:

- The **Green Revolution** of the 1960s pulled India from the brink of starvation, but the revolution **also made India the world's biggest extractor of groundwater**.
 - According to the **UN's World Water Development Report, 2022**, India extracts 251 cubic km or more than a quarter of the world's groundwater withdrawal each year; 90 % of this water is used for agriculture.
- Currently, there is severe and widespread **deficiency of organic carbon and micronutrients in Indian soils**.
- If **agriculture is to continue to feed the country's undernourished population — 224.5 million, according to the UN's State of Food Security and Nutrition in the World, 2022 — and drive its economy, it needs to work in harmony with nature, not against it**.
- Farmers, activists and agricultural research organisations across the world are **thus developing methods of chemical-less farming which uses natural inputs and cultivation practices such as crop rotation and diversification**, which fall under the wider umbrella of regenerative agriculture.

▪ About Regenerative Agriculture:

- Regenerative agriculture is a **holistic farming system** that focuses on soil health, food quality, biodiversity improvement, water quality and air quality through methods such as **reducing the use of chemical fertilisers and pesticides, reducing tillage, integrating livestock and using cover crops**.
- It adheres to the **following principles**:
 - **Minimize soil disturbance** through conservation tillage
 - Diversify **crops to replenish nutrients** and disrupt pest and disease lifecycles
 - **Retain soil cover** using cover crops
 - Integrate **livestock, which adds manure to the soil** and serves as a source of carbon sinks.



What are the Advantages of Regenerative Agriculture?

- **Improves Soil Health:**
 - It goes a step ahead of sustainable agriculture and aspires not only to maintain the resources like soil and water **but also to improve them.**
 - According to the UN Food and Agriculture Organization, **healthy soil helps in better water storage**, transmission, filtering and reduces agricultural run-off.
- **Water conservation:**
 - Healthy **soil helps in improving water-use efficiency** by better water storage, transmission, filtering and reduces agricultural run-off.
 - Studies have established that 1% increase in soil organic matter per 0.4 hectare increases **water storage potential by more than 75,000 litres.**
- **Energy Conservation:**
 - Regenerative Agriculture practices **conserve energy used by irrigation aids such as pumps.**

What are Indian Efforts to Promote Regenerative Agriculture?

- **The National Project on Organic Farming:**
 - The National Project on Organic Farming is the country's longest experiment on the practice, ongoing since 2004 and conducted by ICAR-Indian Institute of Farming System Research, Meerut.
- **Systematic Rice Intensification:**
 - A method in which seeds are spaced at wider distances and organic manure is applied to improve yields.
- **Zero-Budget Natural Farming:**
 - It is also known as Subhash Palekar Natural Farming and emphasises on preparing and using **inputs made from crop residue, cow dung and urine, fruits, among other things.**
- **Samaj Pragati Sahyog:**
 - It is a grassroots organisation that promotes **natural methods to control agricultural pests** such as composting and recycling of crop residues, use of farm yard manure, cattle urine and application of tank silt, has also made efforts to this end.
 - It has conducted field trials with 1,000 farmers on more than 2,000 ha of land in four districts of Madhya Pradesh and one district of Maharashtra in 2016-18, to measure the water saved.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. How is permaculture farming different from conventional chemical farming? (2021)

1. Permaculture farming discourages monocultural practices but in conventional chemical farming, monoculture practices are predominant.
2. Conventional chemical farming can cause an increase in soil salinity but the occurrence of such phenomenon is not observed in permaculture farming.
3. Conventional chemical farming is easily possible in semi-arid regions but permaculture farming is not so easily possible in such regions.
4. Practice of mulching is very important in permaculture farming but not necessarily so in conventional chemical farming.

Select the correct answer using the code given below.

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

Ans: (b)

Exp:

- Permaculture is an attempt to best use land so that generations in the future can continue to make use of the land in productive manners, allowing for personal subsistence. Permaculture relies on three ethics: care for the earth, care for people and fair share. It draws from several disciplines including organic farming, agroforestry, integrated farming, sustainable development, and applied ecology.
- Chemical farming is defined as the practice where chemicals such as pesticides, herbicides, fungicides, insecticides, and fertilizers are used in agriculture to control pests and disease or control and promote growth.
- Permaculture is a totally integrated design system that is modelled on nature. Permaculture farming promotes multi cropping and integrated farming systems, whereas chemical farming is more suitable for monoculture cropping due to use of crop specific inputs like irrigation, chemical fertiliser and harvesting methods. Hence, 1 is correct.
- Chemical farming makes the soil less fertile over time due to use of chemical fertilizers, which can lead to serious problems like soil salinisation. But such problems do not occur in permaculture farming as it relies on organic fertilizers. Hence, 2 is correct.
- The concept of permaculture involves well-designed systems that do not produce waste and tries to copy well-designed systems. Permaculture tries to take into account local conditions like arid climate, which helps in developing a suitable system to ensure sustainable production. In case of chemical farming, intense use of chemical fertilizers and irrigation make the soil less fertile over time, thus restricting its practice in semi-arid regions. Thus, conventional chemical farming is not suitable for semi-arid regions. **Hence, 3 is not correct.**
- Mulching is a long-established horticultural practice that involves spreading a layer of material on the ground around plants to protect their roots from heat, cold, or drought or to keep the fruit clean. The material used for covering is called 'mulch'. Mulching is usually practiced while cultivating commercially important crops, fruit trees, vegetables, flowers, nursery saplings, etc.
- Mulching is an important component of permaculture farming for promoting maximum efficiency. Whereas, conventional chemical farming does not consider it as essential. **Hence, 4 is correct.**
- **Therefore, option (b) is the correct answer.**

Mains

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

Q. What is Integrated Farming System? How is it helpful to small and marginal farmers in India? (2022)

Source: DTE

PDF Reference URL: <https://www.drishtias.com/printpdf/regenerative-agriculture-1>

