



Assessing the Potential of Natural Farming

For Prelims: [Paramparagat Krishi Vikas Yojana \(PKVY\)](#), [Bharatiya Prakritik Krishi Paddhati \(BPKP\)/ZBNF](#), [National Mission on Natural Farming \(NMNF\)](#)

For Mains: Natural Farming: Significance, Challenges, Related Initiatives & Way Forward

Source: [DTE](#)

Why in News?

An analysis conducted by the [Food and Agriculture Organisation \(FAO\)](#) in collaboration with the Andhra Pradesh (AP) government suggests that the **AP model of natural farming has the potential to double the employment opportunities for farmers** compared to industrial agriculture, thereby reducing overall unemployment and **increasing farmers' incomes by 2050**.

- The analysis was a **part of 'AgroEco2050'**, a collective future-building exercise by the AP government, French agricultural research organisation and **FAO**.

Note:

- **AgroEco2050 initiative aimed to assess two potential futures** for agriculture, food, land use, nature, jobs, and incomes in AP by 2050.
 - One vision focused on intensifying conventional industrial farming, while the other explored scaling up **natural farming (agroecology)**.
- The goal was to compare the implications of these two pathways and assess their coherence.

What is Natural Farming?

- **About & Objective:** Natural farming is a **chemical-free approach** that relies on locally available resources, including desi cow dung and urine, and emphasises traditional, indigenous practices.
 - It eliminates the use of synthetic fertilisers and pesticides, **promoting on-farm biomass recycling, including mulching, and pest management** through biodiversity, botanical concoctions, and exclusion of all synthetic chemicals.
 - Internationally, **Natural Farming is considered a form of regenerative agriculture**—a prominent strategy to save the planet.
 - It has the **potential to manage land practices and sequester carbon from the atmosphere** in soils and plants, where it is useful instead of being detrimental.
- **Current Scenario:** Several states, including Andhra Pradesh, Karnataka, Himachal Pradesh, Gujarat, Uttar Pradesh, and Kerala, have already adopted natural farming and developed successful models.

- While still in its initial stages, **the natural farming system is steadily gaining acceptance** within the farming community.

Zero Budget Natural Farming (ZBNF)

- **ZBNF in Andhra Pradesh:**
 - Introduced in 2016 by AP as an alternative to chemical-based, capital-intensive agriculture, **ZBNE is implemented through Rythu Sadhikara Samstha** (a non-profit created by the state's agriculture department).
 - The scheme, **now called Andhra Pradesh Community Managed Natural Farming**, aims to cover 6 million farmers over 6 million hectares.
- **ZBNF in 2019 Union Budget:**
 - The ZBNF was also **highlighted in the 2019 Union budget** in the bid to **double farmers' income by 2022**.
 - It is **promoted as 'Bharatiya Prakritik Krishi Paddhati' (BPKP)** under the centrally sponsored scheme Paramparagat Krishi Vikas Yojana (PKVY) with a focus on encouraging **traditional and indigenous agricultural practices**.

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COMPONENTS OF NATURAL FARMING



Beejamrit

The process includes treatment of seed using cow dung, urine and lime based formulations.

Jivamrit

The process enhances the fertility of soil using cow urine, dung, flour of pulses and jaggery concoction.

Whapasa

The process involves activating earthworms in the soil in order to create water vapor condensation.

Mulching

The process involves creating micro climate using different mulches with trees, crop biomass to conserve soil moisture.

Plant Protection

The process involves spraying of biological concoctions which prevents pest, disease and weed problems and protects the plant and improves their soil fertility.

Why Should Natural Farming be Adopted?

- **Employment Impact:** As per the **FAO**, by 2050, **natural farming will employ twice as many farmers as industrial agriculture**, with 10 million farmers in natural farming compared to 5 million in industrial farming.
 - This shift would reduce unemployment, which is **projected to rise to 30% in the industrial agriculture scenario**, while in the natural farming scenario, unemployment would drop to 7%.
- **Farmer Income:** Natural farming is expected to be **more profitable for farmers** due to lower production costs (seeds, chemicals, [irrigation](#), credit, and machinery) and better market prices for high-quality produce.
 - The **income gap between farmers and non-farmers** would narrow significantly—from **62% in 2019 to 22% in 2050** under natural farming. This is nearly half the income gap of 47% expected in the industrial agriculture scenario by 2050.
- **Land Use and Biodiversity:** Under **natural farming, the total cultivated area in 2050 would be 8.3 million hectares**, compared to 5.5 million hectares under industrial agriculture.
 - Natural farming would contribute to reversing [land degradation, desertification](#), and improving biodiversity through regenerative and agroecological practices.
- **Nutritional Benefits:** Despite slightly **lower yields per hectare, natural farming would produce more nutritious food per capita** (5,008 kilocalories/day) compared to industrial agriculture (4,054 kilocalories/day).
 - The food from natural farming would be richer in [macronutrients, micronutrients](#), and fiber, and would contain no chemicals (fertilizers, pesticides) or antibiotics.



What are the Challenges Related to Natural Farming?

- **Inadequate Farmer Training and Handholding:** Farmers require more comprehensive training and continuous support to transition to and sustain natural farming practices.
 - The current training systems are insufficient in addressing the full range of needs.
- **Cumbersome Certification Process:** The certification process for organic farming, particularly the [Participatory Guarantee System \(PGS-India\)](#), is seen as complicated and not farmer-friendly.
 - Additionally, **third-party certifications are expensive**, which is a barrier for small farmers.
 - The [National Programme for Organic Production \(NPOP\)](#), implemented by the [Agricultural and Processed Food Products Export Development Authority \(APEDA\)](#), grants organic farming certification through a **process of third party certification**.
- **Poor Marketing Linkages:** There is a lack of effective **marketing systems for organic**

produce, leading to concerns about remunerative prices.

- Without proper buy-back or procurement provisions, such as those in the [Pradhan Mantri Krishi Vikas Yojana \(PKVY\)](#), farmers face difficulty in selling their products at fair prices.
- **Insufficient Funding and Policy Support:** Organic and natural farming programs receive minuscule budget allocations compared to the subsidies provided for chemical fertilizers, which is a significant barrier to scaling up efforts.
 - There is also a **lack of holistic understanding and support from the scientific community**, which limits the case for change and investment in organic farming.
- **Slow Progress in State-Level Implementation:** While some states have organic policies, the implementation has been slow.
 - Despite having policies, **states like Karnataka, Kerala**, and others have not been able to achieve significant coverage or meet their targets.
- **Dependency on Chemical Inputs:** A large part of the agricultural system remains heavily reliant on chemical inputs like fertilisers and pesticides, with organic alternatives still not being widely promoted or adopted.
 - Low yields in natural and organic farming, **coupled with high susceptibility to pests and weeds, deter small and marginal farmers** from adopting these practices.
 - For **these farmers, who make up over 80% of India's agricultural community**, reduced production **poses a serious threat to their livelihoods**, contributing to the slow adoption of such farming methods.

Initiatives Related to Natural Farming in India

- [Paramparagat Krishi Vikas Yojana \(PKVY\)](#)
- [Bharatiya Prakritik Krishi Paddhati \(BPKP\)/ZBNF](#)
- [National Mission on Natural Farming \(NMNF\)](#)

Way Forward

- **Scientific Studies on Yields:** A major challenge with natural farming is that it may result in **lower yields** for staple crops like wheat and rice, which could threaten food security for India's large population.
 - To address this, it is **essential to conduct thorough and rigorous scientific research** on crop yields from natural farming, especially for these key crops, before considering its widespread adoption.
- **Localised Adoption:** While natural farming may be beneficial on a localised level, it is suggested that **its application be limited to supplementary foodstuffs** rather than core staples.
 - This would **allow for a balance between sustainability and food security**, with natural farming used for non-staple crops.
- **Risk Mitigation for Food Security:** To avoid potential risks to national food security, the adoption of natural farming must be carefully evaluated through scientific tests, especially regarding the productivity and yield of staple crops.
 - **Before transitioning from chemical to natural farming** on a large scale, extensive studies are crucial. **Sri Lanka's previous transition to organic farming**, which included banning chemical fertilisers, **led to reduced yields, especially in rice, jeopardising food security**.
 - This resulted in a surge in prices and widespread protests, highlighting the risks of hasty policy changes.

Drishti Mains Question

Evaluate the potential of natural farming as a sustainable agricultural model in India.

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)

Mains

Q. What are the present challenges before crop diversification? How do emerging technologies provide an opportunity for crop diversification? **(2021)**

Q. How has India benefited from the contributions of Sir M. Visvesvaraya and Dr. M. S. Swaminathan in the fields of water engineering and agricultural science respectively? **(2019)**