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## NATURAL FARMING

### SYLLABUS:

GS 3 > Economic Development >> Agriculture

### REFERENCE NEWS:

**Natural farming**, with its emphasis on biodiversity, soil health, and reduced chemical inputs, is gaining traction across India's agricultural landscape. **Andhra Pradesh, Gujarat and Himachal Pradesh** have emerged as testing grounds for this promising method, showcasing unique models that focus on sustainable agriculture. The 2024-25 Union Budget, with its allocation of substantial resources to natural farming, marks a pivotal moment.

### NATURAL FARMING IN INDIA:

Natural Farming is a **chemical-free** farming system rooted in Indian tradition enriched with modern understanding of ecology, resource recycling and on-farm resource optimization.

It is considered as **agroecology based diversified farming system** which integrates crops, trees and livestock with functional biodiversity.

It is largely based on on-farm biomass recycling with major stress on biomass mulching, use of on-farm cow dung-urine formulations; maintaining soil aeration and exclusion of all synthetic chemical inputs.

Natural farming is expected to reduce dependency on purchased inputs. It is considered as a **cost-effective farming** practice with scope for increasing employment and rural development.

Many states are already following natural farming and have developed successful models. State of Andhra Pradesh, Karnataka, Himachal Pradesh, Gujarat, Uttar Pradesh and Kerala are among the leading states.

Natural farming aims at **restoring soil health, maintenance of diversity**, ensure **animal welfare**, stress on **efficient use of natural/local resources** and promote **ecological fairness**.

Natural farming is an **ecological farming approach** where farming system works with the natural biodiversity, encouraging the soil's biological activity and managing the complexity of living organisms both plant and animal to thrive along with food production system.

Important practices, essential for adoption of natural farming includes **no external inputs**, local seeds (use of local varieties), on-farm produced microbial formulation for seed treatment (**bijamrita**), on-farm made microbial inoculants (**Jivamrita**) for soil enrichment, cover crops and mulching with green and dry organic matter for nutrient recycling and for creating a suitable

micro-climate for maximum beneficial microbial activity in soil, mixed cropping, managing diversity on farm through integration of trees, management of pests through diversity and local on-farm made botanical concoctions (such as neemastra, agniastra, neem ark, dashparni ark etc), integration of livestock, especially of native breed for cow dung and cow urine as essential inputs for several practices and water and moisture conservation.

Major Objectives of Natural farming:

- Preserve natural flora and fauna
- Restore Soil fertility and production and biological life
- Maintain diversity of crop production
- Efficient utilization of land and natural resources (light, air, water)
- Promote inbuilt natural inspectors, animals and microbes in soil
- Promotion of local breeds of Livestock integration
- Use of Natural / local based inputs
- Reduce input cost of agricultural production
- Improve economy of farmers

**Paramparagat Krishi Vikas Yojana (PKVY): The National Mission on Natural Farming** is an upscaling of the Bhartiya Prakritik Krishi Paddati (BPKP) which is a sub-scheme under Paramparagat Krishi Vikas Yojana (PKVY). PKVY provides financial assistance to farmers who want to adopt organic farming practices and encourages them to use eco-friendly techniques for pest management and soil fertility management.



**Climate Smart Agriculture:** An integrated approach to managing landscapes-cropland, livestock, forests, and fisheries-that address the interlinked challenges of food security and climate change. It aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes, adapting and building resilience to climate change, and reducing greenhouse gas emissions wherever possible.

### **BENEFITS OF NATURAL FARMING IN INDIA**

**Natural Farming** is a traditional, sustainable agricultural practice that minimizes or eliminates the use of synthetic chemicals like fertilizers and pesticides.

**Improved Yield and Crop Quality:** According to the **Economic Survey of India**, natural farming helps maintain yield levels while significantly cutting down on input costs, making it a viable alternative to traditional farming.

Farmers practicing natural farming in Andhra Pradesh under the **Andhra Pradesh Community Managed Natural Farming (APCNF)** initiative reported similar or higher yields compared to those using chemical fertilizers. The practice of Pre-Monsoon Dry Sowing (PMDS) enhanced soil fertility and reduced water usage.

**Cost Reduction and Increased Farmers' Income:** According to NITI Aayog, farmers practicing natural farming in India have seen an average reduction in input costs by 60-70%, contributing to a significant increase in their income.

In Gujarat's **Dang district**, natural farming initiatives provided a **monthly subsidy of ₹900** for maintaining cows used in preparing bio-fertilizers like Jeevamrit. Farmers also received up to **75% subsidy** on natural farming kits, which further reduced costs.

**Soil Health and Environmental Conservation:** Studies by the Indian Council of Agricultural Research (ICAR) indicate that natural farming significantly increases soil organic carbon, leading to better water retention and nutrient availability.

The adoption of natural farming in **Himachal Pradesh** under the **Prakritik Kheti Khushhal Kissan Yojana (PK3Y)** has improved soil health and increased organic content, resulting in sustainable agriculture practices. The scheme has enabled over **54,914 farmers** to adopt chemical-free farming practices on 2,451 hectares of land.

**Water Conservation:** Natural farming can use up to **10% of the irrigation water** required by conventional farming, highlighting its potential for water-scarce regions in India.

Andhra Pradesh's Community Managed Natural Farming (APCNF) relies on early monsoon rains and water-efficient techniques, reducing water usage by **up to 50%** compared to conventional methods.

**Reduced Greenhouse Gas Emissions and Climate Resilience:** According to the United Nations Food and Agriculture Organization (FAO), natural farming practices can sequester carbon in soils, reducing carbon emissions by up to **30%** compared to conventional farming methods.

In Rajasthan, natural farming practices have been piloted to **reduce carbon and nitrogen footprints**, contributing to climate resilience in arid and semi-arid regions.

**Health Benefits and Food Safety:** Studies suggest that organic and naturally grown foods have **20-40% higher nutrient density** than conventionally grown produce, leading to better health outcomes.

In Andhra Pradesh, farmers practicing natural farming have produced food with higher nutritional content, which has been supported by testing and certification standards. This has increased the market value of their produce, making it attractive to health-conscious consumers.

**Employment Generation and Rural Development:** The Andhra Pradesh model has shown that natural farming can engage more farmers, with an estimated **10 million** farmers employed by 2050 compared to **5 million** in an industrial agriculture scenario.

The **APCNF initiative** in Andhra Pradesh is expected to employ **twice the number of farmers** compared to conventional agriculture by 2050, reducing unemployment and supporting rural livelihoods

**Biodiversity Conservation:** Research indicates that farms practicing natural farming support **30-50% more species diversity**, including beneficial insects, pollinators, and soil organisms, compared to conventional farms

Gujarat's initiative in **Dang district**, which declared the region as fully natural farming-based, has led to increased agro-biodiversity and the conservation of indigenous crop varieties

**Resilience to Market Fluctuations:** In Gujarat, the introduction of **Jeevamrit** and other natural inputs has reduced the dependency on expensive fertilizers, helping farmers stabilize production costs and withstand market volatility

### **CHALLENGES OF NATURAL FARMING:**

**High Labor Intensity and Time Consumption:** The Union Budget 2024-25 emphasized the establishment of **10,000 bio-input resource centres (BRCs)**, but concerns remain about the labour-intensive nature of producing and applying these bio-inputs on a large scale. Farmers in Gujarat's **Dang district** have benefited from mechanization, but many smallholders across India do not have access to such tools

**Limited Availability of Inputs for Bio-Fertilizers:** In Andhra Pradesh, the shortage of indigenous cows has made it difficult for some farmers to source sufficient cow dung and urine for preparing Jeevamrit. Chhattisgarh's **Godhan Nyay Yojana** faced similar issues, with inconsistent supply chains for cow dung, highlighting the need for reliable and region-specific input resources.

**Knowledge Gaps and Lack of Awareness:** In Rajasthan's **Kheti Mein Jaan Toh Sashakt Kisan** initiative, the training of farmers was crucial to adopting natural farming, but it was observed that many farmers still lacked confidence in the methods due to limited technical guidance. According to NITI Aayog, the effective dissemination of knowledge and best practices remains a challenge, with multi-location studies needed for scientific validation and farmer confidence building.

**Challenges in Market Access and Certification:** While the 2024-25 Union Budget focuses on branding and certification for natural products, the scale of this transition is slow. Many farmers find it difficult to obtain certification, which is crucial for fetching higher prices.

**Inconsistent Yields and Pest Management:** Farmers in regions like Uttar Pradesh reported lower yields during the initial years of transitioning to natural farming due to difficulties in managing pests with natural methods.

**Lack of Infrastructure and Support Systems:** In Chhattisgarh, the supply chain disruptions in the Godhan Nyay Yojana highlighted the need for better logistical support for bio-inputs. The experience serves as a caution for similar efforts nationwide.

**Financial Risks and Economic Viability:** In Andhra Pradesh, the shift to Zero Budget Natural Farming (ZBNF) has been challenging for small farmers due to the initial drop in yields and

financial instability, though profitability improves in the long run. According to a joint study by the FAO and the Andhra Pradesh government, natural farming can be profitable by 2050, but financial support is needed during the transition phase to mitigate risks.

**Resistance from Conventional Agricultural Systems:** Farmers in states like Punjab and Haryana, which rely heavily on chemical inputs for high-yielding crops, face cultural and economic barriers to transitioning to natural methods, with significant pushback from the conventional agriculture lobby.

### **WAY FORWARD:**

**Strengthening the Knowledge and Training Infrastructure:** In **Cuba**, the success of sustainable farming has been attributed to comprehensive farmer training and knowledge-sharing networks.

Establish a nationwide network of **Natural Farming Resource Centers (NFRCs)** and Farmer Field Schools to offer training on natural inputs like Jeevamrit and Beejamrit, crop rotation, agroforestry, and integrated pest management.

Invest in local Krishi Vigyan Kendras (KVKs) and Agricultural Universities to conduct on-field demonstrations and research on natural farming techniques.

Utilize successful models like **Andhra Pradesh's Rythu Sadhikara Samstha (RySS)**, which uses farmer-to-farmer training to educate and empower local communities, reducing dependency on external inputs and promoting peer learning.

**Developing Infrastructure for Bio-Input Production:** In **Brazil**, the Ministry of Agriculture supports local cooperatives for producing bio-fertilizers and natural pesticides.

Set up **Community Bio-Input Resource Centers** at the village level to produce and distribute low-cost natural fertilizers and pest control solutions.

Encourage Self-Help Groups (SHGs) and cooperatives to manage these centers, generating employment, particularly for rural women.

**Encouraging Diversified and Integrated Farming Systems:** The **System of Rice Intensification (SRI)** method used in **Madagascar** encourages intercropping and integrated pest management, reducing the need for chemical fertilizers and enhancing crop diversity.

**Implementing Community-Based Water Management Practices:** In **Israel**, precision irrigation techniques like drip irrigation and rainwater harvesting have made agriculture highly water-efficient, even in arid regions. These methods have led to sustainable water use while maintaining high productivity.

**Providing Market Access and Certification Support:** In **Denmark**, organic and natural products are supported by strong market linkages, branding, and certification programs that fetch premium prices for farmers. A streamlined certification process has enabled small-scale farmers to access high-value markets.

Develop a **National Certification System for Natural Products** to streamline the certification process and reduce bureaucratic hurdles, enabling farmers to access premium markets.

Use Geographic Indication (GI) tags for unique regional natural products, similar to the branding of Dang's maize in Gujarat, to fetch higher prices and create regional identity.

**Scaling Up Public-Private Partnerships (PPP) in Natural Farming:** In the **United States**, the Sustainable Agriculture Research and Education (SARE) program encourages PPPs to develop sustainable agriculture technologies, share knowledge, and enhance research.

**Adopting Digital Solutions and Precision Agriculture:** In the **Netherlands**, precision farming technologies like GPS-guided equipment, soil sensors, and farm management software have optimized inputs, reduced waste, and increased productivity.

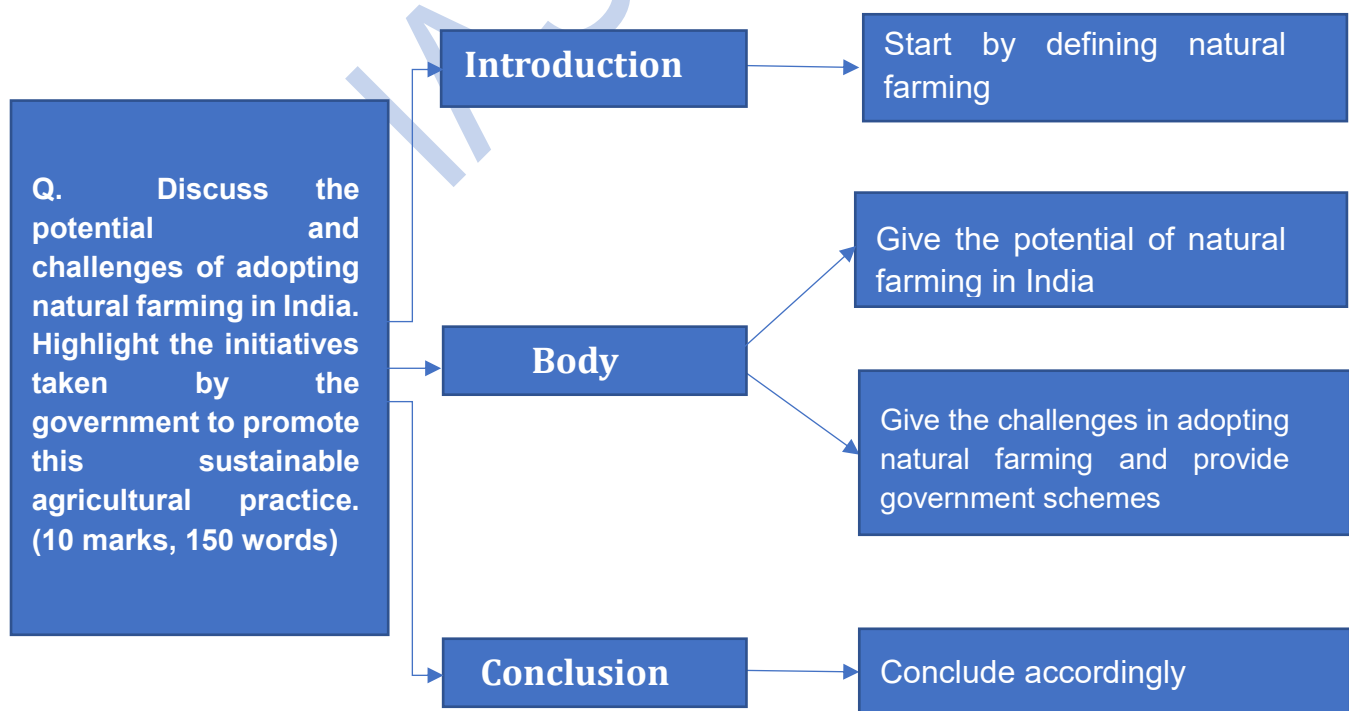
**Incentivizing Natural Farming through Policy and Financial Support:** In **Japan**, the government supports organic and natural farmers with subsidies, low-interest loans, and tax benefits to encourage the transition from conventional to sustainable practices.

**Creating Employment Opportunities in the Natural Farming Ecosystem:** In **Italy**, agritourism has created employment in rural areas by combining sustainable farming with tourism, educational workshops, and eco-friendly experiences.

### **PRACTICE QUESTION:**

**Q. Discuss the potential and challenges of adopting natural farming in India. Highlight the initiatives taken by the government to promote this sustainable agricultural practice. (10 marks, 150 words)**

### **APPROACH:**



### **MODEL ANSWER:**

Natural farming is an ecologically sustainable agricultural method that minimizes the use of chemical inputs and promotes the use of organic materials like bio-fertilizers (Jeevamrit, Beejamrit). In India, natural farming has gained momentum as a viable alternative to conventional farming due to its potential to improve soil health, reduce input costs, and enhance resilience to climate change.

### **POTENTIAL OF NATURAL FARMING IN INDIA:**

- **Cost Reduction:** Natural farming significantly reduces dependency on expensive synthetic fertilizers and pesticides, lowering input costs. According to NITI Aayog, farmers practicing natural farming have reported a **60-70% reduction in input costs**, leading to increased net income.
- **Environmental Benefits:** It enhances soil health by improving organic content and promotes biodiversity, reducing greenhouse gas emissions by up to **30%** compared to conventional farming.
- **Water Conservation:** Techniques like mulching and intercropping reduce irrigation needs, making natural farming suitable for water-scarce regions. Andhra Pradesh's Community Managed Natural Farming (APCNF) reduced water use by **50%** compared to conventional methods.

### **CHALLENGES OF NATURAL FARMING:**

- **Knowledge Gaps:** There is a lack of awareness and technical knowledge among farmers, leading to hesitancy in adopting natural practices. Many farmers are unfamiliar with preparing bio-inputs.
- **Market Access:** Farmers often face challenges accessing premium markets for organic produce, limiting the economic benefits. Certification processes are also cumbersome.
- **Yield Variability:** Inconsistent yields during the transition phase can deter small farmers who rely heavily on stable production.

### **GOVERNMENT INITIATIVES:**

- **Bhartiya Prakritik Krishi Paddhati (BPKP):** Launched to promote traditional indigenous practices, focusing on organic inputs like cow dung.
- **Paramparagat Krishi Vikas Yojana (PKVY):** Provides financial assistance to farmers transitioning to organic and natural farming, focusing on cluster development and certification support.
- **Prakritik Kheti Khushhal Kissan Yojana (PK3Y):** Himachal Pradesh's initiative, promoting chemical-free agriculture with training and financial incentives.
- **National Mission on Natural Farming:** Under NMNF, farmers will receive a **financial assistance of ₹15,000 per hectare per year for three years** for the creation of on-farm input production infrastructure.
- **Union Budget 2024-25:** Emphasized natural farming, announcing **10,000 Bio-Input Resource Centers (BRCs)** to facilitate access to organic inputs.

Natural farming holds significant potential for sustainable agriculture in India, offering economic, environmental, and health benefits. However, addressing challenges related to knowledge gaps, market access, and yield stability is crucial. Government initiatives, financial incentives, and community training programs play a vital role in promoting the adoption of natural farming across the country.

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