Analyzing the Pattern of Organic Farming in Gujarat and Madhya Pradesh: A Review

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Abstract— *This article explores the concept of organic agriculture, highlighting its core principles and outlining the certification process. Organic agriculture is a holistic approach to food production that prioritizes the well-being of soil, ecosystems, and individuals. It emphasizes natural processes, biodiversity, and minimal external inputs to cultivate healthy crops and promote environmental sustainability.*

The article also details the certification process for organic farms, outlining the steps involved in complying with organic standards and obtaining official certification.

Keywords— Organic agriculture, Sustainable agriculture, Organic farming principles, Organic certification, IFOAM principles of organic agriculture, Soil health, Biodiversity in agriculture.

I. INTRODUCTION

1.1 Organic Agriculture:

"Organic Agriculture" a generation framework that supports the well-being of soils, environments and individuals. It depends on biological forms, biodiversity and cycles adjusted to nearby conditions, or maybe than the utilize of inputs with antagonistic impacts. Organic Agriculture combines convention, development and science to advantage the shared environment and advance reasonable connections and a great quality of life for all included.

1.2 Principles of Organic Agriculture by IFOAM:

1.2.1 Principle of Health:

According to this principle the health of individuals and communities cannot be isolated from the well-being of biological systems. Solid crops created by sound soil will cultivate the well-being of creatures and individuals. Well-being is not basically the nonattendance of sickness, but the upkeep of physical, mental, social and environmental well-being. Resistance, strength and recovery are key characteristics of well-being.

1.2.2 Principle of Ecology:

Principle of Ecology states that generation is to be based on environmental forms and reusing. Through the biology of the particular generation environment, food and well-being are accomplished. E.g. in the case of crops this is the living soil; for creatures it is the cultivate environment; for fish and marine organisms, the aquatic environment.

1.2.3 Principle of Fairness:

The rule of fairness emphasizes on those who are included in natural agribusiness ought to treat human connections in such a way which guarantees fairness at all levels and to all parties – agriculturists, specialists, processors, wholesalers, dealers and customers. Destitution diminished, commitment for nourishment sway, great quality of life ought to get conveyed through organic agribusiness.

1.2.4 Principle of Care:

Organic agriculture specialists can increment proficiency and efficiency, but care ought to be taken that well-being and prosperity are not at chance of jeopardizing. This guideline states that safeguard and obligation are the key concerns in administration, advancement and innovation choices in natural horticulture. Science is essential to guarantee that natural agribusiness is sound, secure and biologically sound. In any case, logical information alone is not adequate. Viable involvement, amassed intelligence and conventional and innate information offer substantial arrangements, tried by time.

- **Certified organic**: Items carrying a image, symbol or other exchange stamp to appear that they are certified natural. This certification is given by different private bodies, independent bodies or NGO which may or may not be authorize to Government organic Program of that country. The least benchmarks required to get certification may shift nation to nation.
- **Claimed organic**: Some of the time without any certification individuals claimed their items as an organic. An organic claim is any claim that portrays a item as natural, or the fixings utilized to make an item as an organic without any certification.
- **Seen organic**: This is a common understanding between dealer and buyer. The buyer has seen by itself so it appears believe on item as an organic. Now and then it is called organic since it is tried by organic firms.
- **From forest:** Sometimes the produces which are straight forwardly gotten from woodland are moreover considered as an natural.
- **Virgin land:** If the land utilized for the getting produces have never been uncovered to any manufactured chemicals at that point such a land considered as a virgin land so the yields are considered as an natural.
- **Natural farming:** If rancher is utilizing characteristic sources which as of now exist in nature by default. E.g. bovine waste, leaf fertilizer, etc. Such produces are too called as an natural.
- **No inputs used:** Sometimes land is cleared out untreated without any inputs utilized. So the plants develop on their possess and produces are still considered as organic.

II. THE CERTIFICATION PROCESSES

To certify a farm, the farmer must undertake several additional activities alongside regular farming operations:

- **Study -** Familiarize oneself with organic standards, which detail the permitted and prohibited practices for all aspects of farming, including storage, transport, and sales.
- **Compliance -** Ensure that farm facilities and production methods adhere to these standards, which may require modifying facilities, changing suppliers, and other adjustments.
- **Documentation -** Maintain thorough paperwork that includes farm history, current setup, and typically, results from soil and water tests.

- **Planning -** Submit an annual production plan outlining every detail from seed to sale, including seed sources, field and crop locations, fertilization and pest control activities, harvest methods, and storage locations.
- **Inspection -** Undergo annual on-farm inspections, which involve a physical tour, record examination, and an oral interview.
- **Fee -** Pay a fee to the certification body for annual monitoring and for the certification mark, which is recognized in the market as a symbol of quality.
- **Record-keeping -** Keep detailed, daily records of farming and marketing activities, which must be available for inspection at any time.

Additionally, farmers must be prepared for short-notice or surprise inspections and may need to conduct specific tests, such as those on soil, water, or plant tissue, upon request.

2.1 Certification & Product Labeling

Certification aims to protect consumers from the misuse of the term "organic" and simplify the process of purchasing organic products. However, the organic labels made possible through certification often require additional explanation.

In many countries, organic legislation defines three levels of organic products. Products made entirely with certified organic ingredients and methods can be labeled "100% organic." Those with 95% organic ingredients can use the term "organic," and both of these categories may display the organic seal. A third category, containing at least 70% organic ingredients, can be labeled "made with organic ingredients." Products with less than 70% organic ingredients cannot advertise this on the front label but can list it in the ingredients statement.

2.2 Participatory Guarantee Systems (PGS) by the National Program for Organic Production (NPOP)

According to the International Federation of Organic Agriculture Movements (IFOAM) definition from 2008, "Participatory Guarantee Systems are locally focused quality assurance systems. They certify producers based on the active participation of stakeholders and are built on a foundation of trust, social networks, and knowledge exchange."

PGS is a process where individuals in similar circumstances, such as smallholder producers, assess, inspect, and verify each other's production practices. They then decide on organic certification, which can be either PGS-Green or PGS-Organic.

FIGURE 1: Certification Flow Chart of PGS

TABLE 1
ORGANIC TREND IN INDIA

Sr. No	State Name	Organic Production (In MT)	Conversion Production (In MT)
1	Madhya Pradesh	738,201.84	87,424.57
2	Maharashtra	724,946.90	65,380.40
3	Rajasthan	311,170.77	11,802.18
4	Karnataka	237,090.18	1.25
5	Uttar Pradesh	215,506.50	2,013.01
6	Gujarat	89,978.28	49,750.40
7	Odisha	64,976.16	65,100.84
8	Jammu & Kashmir	50,230.38	0.00
9	Uttarakhand	43,954.51	0.00
10	Kerala	42,729.09	5.16
11	Tamil Nadu	24,964.04	109
12	Andhra Pradesh	24,190.25	0.00
13	Bihar	19,853.89	0.00
14	Chhattisgarh	17,703.47	0.00
15	West Bengal	15,409.18	0.00
16	Assam	14,497.86	0.00
17	Meghalaya	9,919.69	0.00
18	Himachal Pradesh	6,978.06	0.00
19	Punjab	482.98	5,940.72
20	Jharkhand	4,363.09	0.00
21	Haryana	2,679.58	0.00
22	Goa	2,488.52	70.14
23	Telangana	837.64	433.05
24	Arunachal Pradesh	793.00	0.00
25	Tripura	332.78	216.04
26	Mizoram	334.00	0.00
27	Sikkim	51.90	0.00
28	Manipur	11.00	0.00
29	Pondicherry	4.00	0.00
Total:		**2664679.54**	**288246.75**

(Source: APEDA, The information provided by the certification bodies accredited under NPOP on Tracenet)

The table provided presents data on organic and conversion production in metric tons (MT) for various states in India. Organic production refers to the yield from certified organic farms, while conversion production refers to the yield from farms transitioning to organic certification.

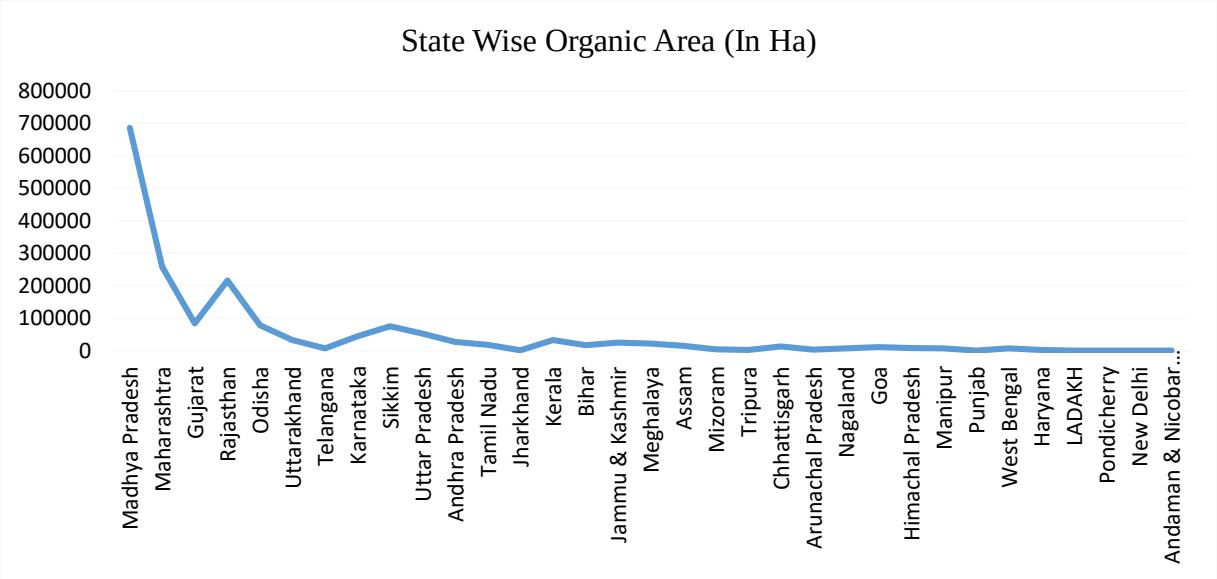
Madhya Pradesh is the leading state in both organic and conversion production, significantly impacting the national figures.

Maharashtra also shows high production levels in both categories, slightly behind Madhya Pradesh.

Odisha stands out in conversion production but does not rank high in organic production, indicating a strong transition phase.

- States like Karnataka and Uttar Pradesh contribute significantly to organic production but have minimal conversion production, suggesting a stable organic farming sector.
- States like Punjab and Gujarat show notable conversion production, indicating a potential future increase in their organic production.
- Kerala and Tamil Nadu have modest organic production levels with very low conversion production, indicating established organic practices.
- Jammu & Kashmir and Uttarakhand have organic production but no conversion production, suggesting no significant transition activities.
- Punjab shows a higher conversion production relative to its organic production, indicating an ongoing transition to organic farming.

2.3 State-wise Cultivated Organic farm area for the Year 2022-23



Source: APEDA

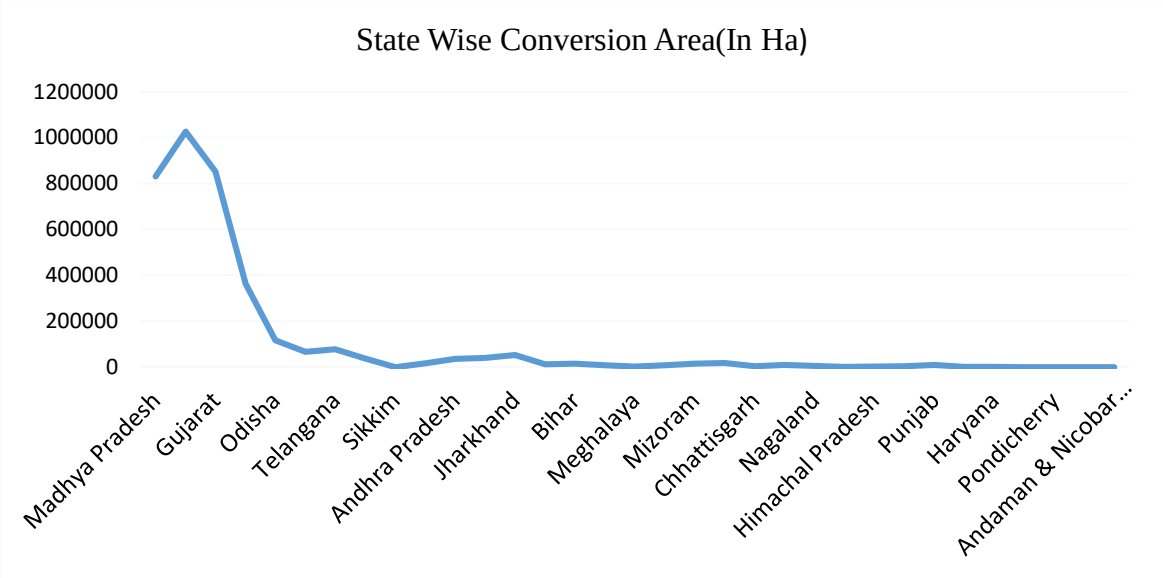
The chart titled "State Wise Organic Area (In Ha)" provides a clear visualization of the distribution of organic farming areas across various states and union territories in India. Madhya Pradesh emerges as the dominant state with nearly 800,000 hectares dedicated to organic farming, making it a significant leader in this sector. Following Madhya Pradesh, there is a noticeable steep decline in the organic farming area, indicating a considerable disparity between Madhya Pradesh and other states.

Other states with notable organic farming areas include Gujarat, Odisha, Telangana, and Andhra Pradesh, though their contributions are significantly lower compared to Madhya Pradesh. This sharp drop-off suggests that while these states have substantial organic farming activities, they are far behind the leader in terms of the area dedicated to organic practices.

Many states, such as Bihar, Jharkhand, and Meghalaya, exhibit relatively small areas under organic farming. This points to either lower adoption rates of organic farming practices or lesser availability of agricultural land for organic cultivation in these regions. Towards the far right of the chart, states and union territories like Haryana, Pondicherry, and the Andaman & Nicobar Islands show minimal areas under organic farming, indicating very low levels of organic farming activity.

The chart underscores a high concentration of organic farming areas in a few states, particularly Madhya Pradesh. This concentration could be due to favorable state policies, higher farmer awareness, and more suitable agricultural conditions. On the other hand, states with smaller organic farming areas highlight regions with potential for growth. With appropriate incentives, support, and awareness programs, these states could significantly increase their organic farming activities.

2.4 State-wise Cultivated In Conversion farm area for the Year 2022-23:



The chart titled "State Wise Conversion Area (In Ha)" illustrates the distribution of land under conversion to organic farming across various states and union territories in India. Gujarat emerges prominently, with nearly 1,000,000 hectares dedicated to this transition, indicating a significant focus on adopting organic farming practices. Following Gujarat, there is a marked decline, suggesting that the bulk of conversion activities are highly concentrated in this state. Other states like Odisha, Madhya Pradesh, and Telangana also have substantial areas under conversion, though their figures are considerably lower than Gujarat's.

States such as Andhra Pradesh, Sikkim, Jharkhand, and Bihar exhibit relatively smaller areas under conversion, indicating a slower or more gradual shift to organic farming. Towards the far right of the chart, regions like Haryana, Pondicherry, and the Andaman & Nicobar Islands have minimal conversion areas, reflecting very low levels of ongoing transition to organic farming.

The chart underscores a high concentration of conversion areas in a few states, particularly Gujarat, which may be driven by specific state policies promoting organic farming or the availability of larger agricultural lands suitable for conversion. This pattern is similar to the organic area distribution, highlighting regions with significant potential for growth in organic farming. States with smaller conversion areas represent opportunities for increased support and awareness to facilitate a more significant transition to organic practices.

As these areas complete their transition, states with larger conversion areas are expected to see a notable increase in organic production. This trend is particularly promising for Gujarat, Odisha, and Madhya Pradesh. Overall, the chart reveals a substantial disparity in conversion activities, with the potential for more balanced growth across India through targeted policies and incentives. This transition phase is critical for boosting future organic production and achieving sustainable agricultural practices nationwide.

III. AGRICULTURE OF MADHYA PRADESH

Agriculture is the primary economic activity in Madhya Pradesh, with 70% of the population engaged in agriculture and related fields. In the fiscal year 2019-20, agriculture contributed 23.36% to the state's GDP, underscoring its vital role in the region's economy. Given its importance, agriculture in Madhya Pradesh is a significant topic covered in the MPPSC (Madhya Pradesh Public Service Commission) syllabus, relevant for both the prelims and mains examinations.

3.1 MP Crop Cycle:

The agricultural practices in Madhya Pradesh are heavily influenced by the crop cycle, with distinct Kharif and Rabi seasons. These seasons dictate the sowing and harvesting times for various crops, ensuring that they align with the climatic conditions.

3.2 Agricultural Holdings:

Madhya Pradesh features a variety of agricultural holdings, ranging from small to large farms. The distribution and size of these holdings play a crucial role in determining productivity and the types of crops grown.

3.3 Cropping Pattern:

The state's cropping pattern is diverse, featuring major crops such as wheat, rice, maize, soybean, and pulses. These crops are selected based on their suitability to the local climate, soil types, and water availability.

3.4 Land Classification System:

Madhya Pradesh employs a land classification system to categorize land based on its usage and productivity. This system aids in effective land management and planning for agricultural activities.

3.5 Major Crops:

- **Wheat:** Primarily grown during the Rabi season, it is one of the state's staple crops.
- **Rice:** Cultivated mainly during the Kharif season, rice is a significant crop for the state's agricultural economy.
- **Soybean:** A major Kharif crop, soybean significantly contributes to the state's agricultural output.
- **Pulses:** Various legumes are grown throughout different seasons, playing an essential role in the agricultural landscape.

3.6 Impact of Physical Environment:

The physical environment, including climate, soil type, and water resources, profoundly impacts crop production and distribution. Madhya Pradesh's varied topography and climatic conditions necessitate a diversified agricultural approach to ensure optimal crop yields.

3.7 Impact of Social Environment:

The social environment, encompassing factors like land ownership patterns, agricultural practices, and community involvement, also influences crop production and distribution. Social structures and local traditions shape the agricultural framework of Madhya Pradesh.

3.8 Agricultural Research Facilities, Corporations, and Institutes:

Madhya Pradesh is home to several key agricultural research facilities, corporations, and institutes focused on improving agricultural productivity and sustainability. These institutions engage in research, development, and support activities to aid the farming community. Notable organizations include:

- Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKVV): An agricultural university dedicated to education and research.
- Madhya Pradesh State Agricultural Marketing Board (Mandi Board): Regulates agricultural markets and ensures fair trade practices.
- Madhya Pradesh Agro Industries Development Corporation (MP Agro): Facilitates the growth of agro-industries and provides resources to farmers.

3.9 Agricultural Impact on Poverty:

Madhya Pradesh has a high poverty rate, particularly in rural areas. Rapid agricultural growth is crucial for significantly reducing rural poverty. Data indicate that rural poverty in Madhya Pradesh decreased from 53.6% in 2004-05 to 35.7% in 2011-12. It is expected that more recent statistics will show a continued and possibly accelerated decline in rural poverty due to ongoing agricultural development efforts.

3.10 Significant Achievements:

In 2015, Madhya Pradesh supplied more than 8 million metric tons (MMT) of wheat to the central procurement pool. This was the state's second-highest wheat procurement, surpassing Haryana, which is traditionally the second-highest contributor after Punjab. This achievement highlights Madhya Pradesh's significant role in India's wheat production and procurement landscape**.**

IV. AGRICULTURE OF GUJARAT

The agricultural landscape of Gujarat is indeed remarkable, with its vast cultivable area and diverse agricultural practices. Divided into 7 sub agro-climatic zones, the state benefits from abundant natural resources, including varied soil types and climatic conditions, facilitating diversified cropping patterns.

4.1 Cropping Pattern:

Gujarat boasts a diverse cropping pattern, with crops ranging from staple grains like rice, wheat, and maize to cash crops such as cotton, groundnut, and tobacco. Other important crops include jowar, bajra, pigeon pea, gram, and tur.

4.2 Land Utilization:

More than 50% of Gujarat's total land area is dedicated to agriculture, emphasizing the significance of the sector in the state's economy. The state's favorable agro-climatic conditions and varied soil types contribute to its agricultural productivity.

4.3 Crop Production:

Gujarat is a major producer of several crops at the national level. It leads in the production of crops like cotton, groundnut, and tobacco, contributing significantly to India's overall agricultural output. The state's achievements in cotton, castor, and groundnut production highlight its prowess in these sectors.

4.4 Irrigation Infrastructure:

To support agricultural activities, Gujarat has invested in irrigation infrastructure. The gross irrigated area covers a substantial portion of the total cropped area, ensuring consistent water availability for crops.

4.5 Farmers' Profile:

Gujarat has a significant number of operational landholders, with a mix of marginal, small, semi-medium, medium, and large farmers. This diverse farmer profile reflects the varied scales of agricultural operations in the state.

4.6 Technological Adoption:

The state has been proactive in adopting modern agricultural techniques and technologies to enhance productivity and sustainability. This includes the use of advanced machinery, irrigation methods, and crop management practices.

4.7 Research and Development:

Gujarat has established agricultural research institutions and extension services to promote innovation and knowledge dissemination among farmers. These efforts aim to address challenges such as crop diseases, pest infestations, and soil degradation.

Research and development institutions in Gujarat include Anand Agricultural University, Gujarat Agriculture University, Directorate of Groundnut Research, Central Institute of Fisheries Education, Gujarat Council of Science City, Indian Institute of Management Ahmedabad, and Vibrant Gujarat Agriculture Summit.

4.8 Export Potential:

Due to its surplus production of certain crops, Gujarat has emerged as a significant exporter of agricultural commodities. Exporting items like cotton, groundnut, spices, and fruits contributes to the state's economic growth and global trade presence.

In essence, agriculture in Gujarat is a dynamic sector with a rich agricultural heritage, driven by the efforts of farmers, policymakers, researchers, and agricultural stakeholders. Its continued growth and sustainability are crucial for ensuring food security, rural livelihoods, and overall economic development in the state.

V. CONCLUSION

The data highlights a significant concentration of organic and conversion farming activities in certain states, notably Madhya Pradesh and Maharashtra, with substantial contributions also coming from Rajasthan, Karnataka, and Uttar Pradesh in organic production. Meanwhile, states like Odisha and Gujarat show promising signs of growth in conversion production, indicating a potential expansion of their organic sectors. This analysis underscores the uneven distribution of organic farming across India, suggesting ample room for development in many regions.

In conclusion, the disparities in organic farming areas across India are evident, with Madhya Pradesh emerging as a leader in this domain. However, there is vast potential for organic farming expansion in states with minimal current organic farming areas. By addressing these imbalances through targeted policies and initiatives, India can bolster its overall organic farming landscape, promoting sustainability and environmental conservation.

Shifting focus to Madhya Pradesh, agriculture not only drives the state's economy but also forms a crucial part of the MPPSC examination syllabus. Delving into aspects such as crop cycles, land classifications, and social and physical influences provides a holistic understanding of the state's agricultural dynamics. Furthermore, the presence of research facilities and agricultural institutions underscores ongoing efforts to boost productivity and sustainability. Given its potential to alleviate poverty, agriculture remains a cornerstone of Madhya Pradesh's economic and social development.

Conversely, the agricultural landscapes of Madhya Pradesh and Gujarat epitomize India's rich agrarian heritage, blending tradition with innovation and resilience. Madhya Pradesh showcases a diverse agricultural portfolio and a robust land classification system, contributing significantly to wheat procurement and showcasing farmers' adaptability. Gujarat, on the other hand, boasts advanced irrigation infrastructure and technological adoption, leading the nation in cotton, groundnut, and tobacco production.

Despite their unique strengths, both states share a common commitment to ensuring food security, fostering rural livelihoods, and driving economic development through agriculture. Investment in research and development underscores their shared vision for a sustainable agricultural future. Together, Madhya Pradesh and Gujarat exemplify India's agricultural prowess, reflecting the resilience and ingenuity of its farming communities.

In essence, these states serve as beacons of progress, illuminating the path towards a brighter, more sustainable future for Indian agriculture. As they continue to evolve and innovate, their agricultural journeys inspire hope and optimism, paving the way for a thriving agricultural sector that contributes to the nation's prosperity and well-being.

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