

PERCEPTION OF FARMERS ABOUT NATURAL FARMING

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ABSTRACT

The study aimed to assess farmers' perceptions of Natural Farming practices in Anand district, Gujarat. A sample of 120 farmers, who had received training on Natural Farming through the Agricultural Technology Management Agency (ATMA), were selected for the study. Data were collected through personal interviews and analyzed using appropriate statistical tools. The results showed that a majority of farmers (79.16%) had a high perception of Natural Farming practices, while 9.17% had medium and 9.17% had very high perceptions. No farmers were found to have a very low perception. The study further explored the relationship between farmers' characteristics and their perception of Natural Farming practices. The findings revealed that economic motivation ($r = 0.463$), innovativeness ($r = 0.280$), risk orientation ($r = 0.263$), social participation ($r = 0.218$), and family size ($r = 0.196$) had a significant positive relationship with farmers' perceptions. These results suggest that factors like economic motivation and innovativeness play crucial roles in shaping farmers' perceptions, influencing their willingness to adopt Natural Farming practices. The study concludes that fostering economic motivation and enhancing farmers' social participation are key strategies to promote the wider adoption of natural farming practices.

Keywords: perception, natural farming, farmers, agricultural extension

INTRODUCTION

Natural farming, a sustainable and ecologically friendly approach to agriculture, is gaining increasing recognition globally as a means to mitigate the harmful effects of chemical-intensive farming systems. It offers an alternative to conventional farming methods that rely heavily on synthetic fertilizers, pesticides, and intensive irrigation, all of which have detrimental effects on the environment, soil health, and biodiversity (Gliessman, 2015; Rohan and Vinaya, 2022). In India, the concept of Natural Farming has gained significant traction in recent years, largely in response to the growing concerns over the negative consequences of the Green Revolution. A key proponent of this movement is the concept of Zero Budget Natural Farming (ZBNF), popularized by agriculturist Subhash Palekar. However, in this paper, we focus on Natural Farming practices more broadly, encompassing a variety of techniques that emphasize the use of natural inputs and methods to improve soil fertility, manage pests, and enhance agricultural productivity while preserving the environment.

Natural farming involves methods that are in harmony with nature, utilizing organic inputs, traditional agricultural practices, and ecological balance to maintain the long-term sustainability of farming systems (FAO, 2019). It emphasizes soil health through the use of organic

manure, compost, crop rotation, intercropping, agroforestry, and minimal external inputs. The fundamental objective of natural farming is to reduce the dependency on chemical fertilizers and pesticides and restore the soil's natural fertility. By adopting such practices, farmers can improve the health of the soil, increase biodiversity, conserve water, and reduce greenhouse gas emissions, all while reducing their production costs (Pretty, 2007).

The increasing adoption of Natural Farming in India can be attributed to the growing recognition of its potential to mitigate the adverse effects of conventional agricultural practices. The use of chemical fertilizers and pesticides has led to soil degradation, water pollution, loss of biodiversity, and a decline in the long-term productivity of farming systems (Gupta et al., 2021). As a result, many farmers are turning to Natural Farming methods as a way to address these challenges and improve their livelihoods (Suresh et al., 2022; Rana et al., 2022; Desai et al., 2024). The Indian government, along with various agricultural organizations and non-governmental organizations (NGOs), has been promoting Natural Farming through training programs, workshops, and awareness campaigns (ICAR, 2020). Among the various natural farming practices, Zero Budget Natural Farming (ZBNF) has emerged as one of the most prominent approaches due to its emphasis on minimizing input costs and promoting the use of local resources (Palekar, 2016).

The principles of Natural Farming are deeply rooted in traditional farming practices that have been followed by farmers for centuries (Palekar, 2019). These practices are based on the understanding of the natural environment, soil biology, and the interrelationships between plants, animals, and microorganisms in the farming ecosystem (FAO, 2019). Natural Farming also draws on indigenous knowledge systems that have been passed down through generations, particularly in rural and tribal communities. It is not just a set of farming practices but also a holistic approach to sustainable development that encompasses ecological, economic, and social aspects (Gupta et al., 2021).

In India, the adoption of Natural Farming is viewed as a means of addressing multiple challenges faced by farmers, including declining soil fertility, increasing costs of inputs, water scarcity, and climate change (Tahat et al., 2020). The Green Revolution, which began in the 1960s, resulted in increased food production through the widespread adoption of high-yielding variety seeds, chemical fertilizers, and pesticides. While the Green Revolution led to a dramatic increase in food production, it also brought about significant environmental and social challenges (Mann, 2009). Soil fertility declined due to the overuse of chemical fertilizers, groundwater resources were depleted through excessive irrigation, and the reliance on chemical inputs increased the cost of production, making farming less profitable for many smallholder farmers (Palekar, 2019).

In response to these challenges, Natural Farming offers an alternative that focuses on sustainability, biodiversity conservation, and the promotion of soil health (Altieri, 1999). By adopting Natural Farming practices, farmers can reduce their reliance on expensive external inputs, reduce the environmental impact of their farming operations, and improve the resilience of their farms to climate change (Pretty, 2008). The approach also supports the conservation of natural resources, such as water and soil, which are essential for sustainable agriculture (Chou et al., 2017).

Despite the numerous benefits associated with Natural Farming, the adoption of these practices remains a challenge for many farmers. Several factors, including the lack of awareness, inadequate training, resistance to change, and the perceived risks associated with transitioning from conventional to natural farming methods, contribute to the slow uptake of these practices (Devarinti, 2016). Farmers' perceptions play a crucial role in determining the success of Natural Farming adoption. Perception, in this context, refers to the way farmers view the benefits, challenges, and feasibility of implementing Natural Farming practices on their farms.

Farmers' perceptions of Natural Farming can be influenced by various factors, such as their level of education, economic motivation, innovativeness, social participation, farming experience, and access to information and training. Understanding farmers' perceptions is essential for designing effective policies and interventions that promote the adoption of Natural Farming practices. Research on farmers' perceptions of Natural Farming can provide valuable insights into the factors that influence their decision-making processes and help identify the barriers and opportunities for promoting these practices (Devarinti, 2016).

The adoption of Natural Farming practices is also closely linked to the socio-economic context of farmers. In India, the majority of farmers are smallholder farmers who face numerous challenges, including low-income levels, lack of access to credit, and limited market opportunities (Van Touch et al., 2024). For these farmers, the adoption of Natural Farming practices may be viewed as a way to reduce costs and improve farm profitability. However, transitioning to Natural Farming requires a shift in mindset, as well as the willingness to experiment with new farming techniques and practices. This is where the role of training and extension services becomes crucial in providing farmers with the necessary knowledge and skills to adopt Natural Farming successfully (Azadi et al., 2019).

In this context, the study of farmers' perceptions of Natural Farming becomes essential, as it helps to understand the factors that influence their decision to adopt or reject these practices. By examining farmers' views on Natural Farming, researchers can gain insights into the challenges they face, the benefits they perceive, and the factors that motivate them to make changes in their farming practices (Devarinti, 2016). Understanding these perceptions is crucial for developing strategies to promote Natural Farming and ensure its widespread adoption.

The present study focuses on farmers' perceptions of Natural Farming practices in Anand district, Gujarat, which is located in the heart of the agricultural belt of India. Anand is known for its diverse agricultural production, including dairy, crops such as cotton, groundnut, and pulses, and horticultural crops. The district has also been at the forefront of agricultural innovation and extension, with various initiatives aimed at promoting sustainable farming practices. Given the region's importance in India's agricultural landscape, it is a fitting location to study farmers' perceptions of Natural Farming practices.

The study aims to evaluate the perception of Natural Farming practices among farmers in Anand district. By exploring the factors that influence farmers' perceptions, the

study will provide valuable insights into the challenges and opportunities for promoting Natural Farming in the region. Furthermore, the findings of this study can contribute to the development of targeted policies and interventions to support farmers in adopting sustainable and ecologically responsible farming practices.

OBJECTIVES

- (1) To study the farmers' perception about NF practices
- (2) To ascertain the relationship between selected characteristics of the farmers and their perception about NF practices

METHODOLOGY

The present study employed an Ex-Post-Facto research design, which is commonly used in studies where the researcher aims to examine cause-effect relationships retrospectively, without manipulating variables (Kerlinger, F. N., 1976). This research design is particularly useful in agricultural studies where past events or experiences, such as the adoption of certain farming practices, influence current behaviors and perceptions.

The study was conducted in Anand district, located in the central region of Gujarat, known for its rich agricultural practices and cooperative dairy industry. The selection of this district was intentional, as it serves as an agricultural hub where various farming practices, including Natural Farming, have been promoted in recent years. The study focused on four talukas (administrative subdivisions): Borsad, Anklav, Khambhat, and Umreth. These talukas were specifically chosen based on the number of farmers who had received training on Natural Farming under the Agricultural Technology Management Agency (ATMA) initiative. This initiative plays a pivotal role in educating farmers about sustainable agricultural practices, and selecting these talukas ensured a relevant sample for the study.

To ensure representativeness, three villages were randomly selected from each of the four talukas, resulting in a total of twelve villages across the district. From each selected village, 10 respondents were chosen based on specific inclusion criteria, including those who had participated in Natural Farming training. This gave a total sample size of 120 respondents who were interviewed for the study. These respondents were selected from a diverse set of farming households, ensuring that the findings reflect a broad spectrum of experiences and perceptions related to Natural Farming.

To measure the perceptions of the farmers towards

Natural Farming practices, a structured questionnaire comprising 20 questions was developed. These questions were designed to gauge various aspects of the respondents' knowledge, attitudes, and practices regarding Natural Farming. The questions covered areas such as soil health management, pest control, water conservation, and the economic benefits of Natural Farming. The farmers were asked to rate their responses to these questions on a Likert scale, which enabled the researcher to categorize their perceptions into different levels.

The perceptions of the farmers were then analyzed and grouped into five categories: Very Low, Low, Medium, High, and Very High. These categories were created based on the respondents' overall scores on the 20-question scale, which was designed to reflect the degree of understanding and adoption of Natural Farming principles. The grouping was intended to identify variations in farmers' awareness, acceptance, and adoption of Natural Farming practices, which could be influenced by factors such as socio-economic background, access to information, and previous agricultural experiences.

Through this structured approach, the study aimed to provide a comprehensive understanding of farmers' perceptions of Natural Farming in Anand district. The findings were expected to offer insights into the extent to which Natural Farming is being embraced, the barriers that farmers face in adopting it, and the perceived benefits or challenges that may influence its widespread adoption in the region. Additionally, the categorization of perceptions allows for a nuanced analysis, helping policymakers and extension agencies to design targeted interventions based on the varying levels of awareness and acceptance among different groups of farmers.

RESULTS AND DISCUSSION

Overall perception about ZBNF practices

The data presented in Table 1 reveal a strong positive perception towards Natural Farming (NF) practices among the majority of respondents. Notably, a substantial 79.16% of farmers exhibited a high level of perception, indicating that they have a well-developed understanding of the practices and benefits associated with Natural Farming. This high level of perception is likely a result of the extensive training programs provided through the Agricultural Technology Management Agency (ATMA), peer influences, and the dissemination of information via extension officers, mass media, and fellow farmers. It reflects an increasing interest in sustainable farming practices and the growing recognition of their benefits, such as reduced input costs and improved

Table 1: Distribution of the respondents according to their overall perception about ZBNF practices (n=120)

Sr. No.	Category	Frequency	Per cent
1	Very Low (20.00 to 36.00 score)	00	00.00
2	Low (36.01 to 52.00 score)	03	02.50
3	Medium (52.01 to 68.00 score)	11	09.17
4	High (68.01 to 84.00 score)	95	79.16
5	Very high (84.01 to 100.00 score)	11	09.17

soil health, among the farming community. Additionally, the absence of farmers in the very low perception category suggests that there is no significant resistance to Natural Farming, which could be indicative of a general shift towards more environmentally friendly agricultural practices.

The study also found that 9.17% of respondents had a very high perception, showcasing a group of farmers who not only understand the core principles of Natural Farming but have perhaps fully integrated these practices into their farming systems. These individuals may have a deeper, more comprehensive understanding of how to manage the transition to Natural Farming, possibly benefiting from long-term exposure and continuous involvement in training and support networks. On the other hand, 9.17% of respondents were categorized under medium perception, signifying that while these farmers recognize the advantages of Natural Farming, their application of the practices may not be as thorough or consistent. For this group, further education, field demonstrations, and personalized support could play a crucial role in enhancing their knowledge and confidence to adopt Natural Farming more comprehensively.

The presence of 2.50% of respondents with a low perception suggests that a small proportion of farmers still have reservations about Natural Farming practices. These reservations may stem from limited access to resources, a preference for conventional farming methods, or skepticism about the tangible benefits of Natural Farming. However, it is important to note that the low perception category remains small, pointing to a growing interest in alternative, sustainable agricultural practices across the district. The overall positive distribution of perceptions indicates that Natural Farming is gaining momentum, driven by both intrinsic motivation among farmers to adopt eco-friendly practices and external support systems such as government policies, subsidies,

and effective extension services. For further adoption, it is essential to continue fostering these positive perceptions through targeted interventions aimed at addressing concerns and providing additional support to farmers who are still in the early stages of adoption.

Relationship between selected characteristics of the farmers and their overall perception about ZBNF practices

Table 2: Correlation (r) between selected characteristics of the farmers and their perception about ZBNF practices (n=120)

Sr. No.	Variable	Correlation (r) value
X ₁	Age	0.018
X ₂	Education	0.074
X ₃	Gender	-0.063
X ₄	Farming experience	0.011
X ₅	Size of family	0.196*
X ₆	Social Participation	0.218*
X ₇	Landholding	-0.114
X ₈	Annual income	-0.020
X ₉	Herd size	-0.017
X ₁₀	Farm mass media exposure	0.154
X ₁₁	Extension contact	0.023
X ₁₂	Training received	0.122
X ₁₃	Economic motivation	0.463**
X ₁₄	Risk orientation	0.263**
X ₁₅	Innovativeness	0.280**

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

The results from Table 2 highlight several factors that have a significant positive relationship with farmers' perception of Natural Farming (NF) practices. Among these, economic motivation ($r = 0.463^{**}$) emerged as the most influential factor. This suggests that farmers who are economically motivated, perhaps due to the promise of lower input costs and higher profits from Natural Farming practices, are more likely to have a favorable perception of these methods. Economic benefits, such as reduced dependence on costly chemical inputs, play a key role in motivating farmers to adopt and maintain these practices. In addition, innovativeness ($r = 0.280^{**}$) and risk orientation ($r = 0.263^{**}$) also showed a significant positive correlation. Innovativeness reflects the willingness of farmers to experiment with new techniques, and a higher level of risk orientation indicates an openness to adopting practices that might initially seem uncertain but promise long-term benefits, such as Natural Farming. Farmers who are innovative and risk-oriented are more likely to perceive the potential of Natural Farming and

thus adopt its practices with greater enthusiasm.

Other significant factors influencing farmers' perceptions include social participation ($r = 0.218^*$) and size of family ($r = 0.196^*$). Social participation refers to the involvement of farmers in community-based activities or groups, which can enhance their knowledge and awareness of agricultural innovations like Natural Farming. When farmers are part of local networks, they are more likely to be exposed to information about new agricultural practices and receive support from peers who have already adopted these practices. Additionally, the size of the family can influence a farmer's capacity to engage in Natural Farming practices, as larger families might have more labor resources to implement these practices effectively.

The negative correlations observed in factors such as landholding ($r = -0.114$), annual income ($r = -0.020$), and herd size ($r = -0.017$) suggest that these variables have a less significant or even inverse relationship with farmers' perceptions of Natural Farming practices. This might indicate that farmers with larger landholdings or higher income might be less inclined to adopt Natural Farming due to their established reliance on conventional, input-intensive farming methods. Similarly, a large herd size might signal a more traditional approach to farming that does not prioritize the shift toward sustainable practices like Natural Farming. However, these factors do not seem to significantly impact the overall perception, suggesting that other variables such as economic motivation and risk orientation are more decisive in shaping attitudes toward Natural Farming.

The results suggest that farmers' perceptions of Natural Farming are largely shaped by intrinsic and extrinsic motivators such as economic benefits, innovativeness, and social participation. These findings point to the importance of promoting the economic advantages of Natural Farming through extension programs and training initiatives to increase adoption rates. By fostering a risk-taking and innovative mindset among farmers, particularly through peer influence and exposure to success stories, it is possible to enhance the overall perception and adoption of Natural Farming practices in the region.

CONCLUSION

The study highlighted the key factors influencing farmers' perceptions of Natural Farming practices, revealing that economic motivation, innovativeness, risk orientation, social participation, and family size significantly contribute to shaping these perceptions. The majority of farmers in the study had a high level of perception about Natural Farming practices, largely due to their understanding of the economic

benefits and the potential for sustainable agricultural production. However, factors such as landholding size and income had a minimal negative influence on perceptions, suggesting that larger, wealthier farmers might be less inclined to adopt these practices. These insights underscore the importance of addressing both the economic and social dimensions of farming when promoting Natural Farming practices.

IMPLICATIONS

Given the significant role of economic motivation and innovativeness, policy interventions should focus on enhancing training programs that emphasize the economic benefits of Natural Farming. Extension services should provide hands-on demonstrations, success stories, and financial models showing how farmers can increase their profitability through sustainable practices, thereby reducing dependency on costly inputs.

The positive correlation between social participation and farmers' perceptions suggests that strengthening local farmer groups and networks can enhance the adoption of Natural Farming practices. Policies should encourage the formation of farmer collectives, where experienced farmers can mentor others, share knowledge, and collectively tackle challenges related to the transition to Natural Farming. This will help increase the reach and acceptance of these sustainable practices across different farmer communities.

CONFLICT OF INTEREST

The author(s) declare that there is no conflict of interest

REFERENCES

- Altieri, M. A. (1999). The ecological role of biodiversity in agroecosystems. *Agriculture, Ecosystems & Environment*, 74(1-3), 19-31. [https://doi.org/10.1016/S0167-8809\(99\)00028-6](https://doi.org/10.1016/S0167-8809(99)00028-6)
- Azadi, Y., Yazdanpanah, M., & Mahmoudi, H. (2019). Understanding smallholder farmers' adaptation behaviors through climate change beliefs, risk perception, trust, and psychological distance: Evidence from wheat growers in Iran. *Journal of Environmental Management*, 250, 109456. <https://doi.org/10.1016/j.jenvman.2019.109456>
- Chou, Y., Shen, F., Chiang, S., & Chang, C. (2017). Functional diversity and dominant populations of bacteria in banana plantation soils as influenced by long-term organic and conventional farming. *Applied Soil Ecology*, 110, 21-33.

- Desai, J. D., Patel, S. R. and Patel, H. K. (2024) Relationship between profile of farmers and their perception about organic farming. *Gujarat Journal of Extension Education*, 37(1):101-104. <https://doi.org/10.56572/gjoe.2024.37.1.0016>.
- Devarinti, S. R. (2016). Natural farming: Eco-friendly and sustainable? *Agrotechnology*, 5, 147.
- FAO. (2019). The state of the world's biodiversity for food and agriculture (J. Bélanger & D. Pilling, Eds.). FAO Commission on Genetic Resources for Food and Agriculture Assessments. Rome. <https://www.fao.org/3/CA3129EN/CA3129EN.pdf>
- Gliessman, S. R. (2014). *Agroecology: The ecology of sustainable food systems* (3rd ed.). CRC Press. <https://doi.org/10.1201/b17881>
- Gupta, N., Pradhan, S., Jain, A., & Patel, N. (2021). Sustainable agriculture in India 2021: What we know and how to scale up. Council on Energy, Environment and Water. <https://www.ceew.in/sites/default/files/CEEW-FOLU-Sustainable-Agriculture-in-India-2021-20Apr21.pdf>
- ICAR. (2020). Annual report 2020. Indian Council of Agricultural Research. <https://icar.org.in/sites/default/files/2024-03/ICAR-AR-2020.pdf>
- Kerlinger, F. N. (1976). *Foundation of Behavioural Research*. Surjeet Publication, New Delhi, 198-204.
- Palekar, S. (2016). Zero budget natural farming. Retrieved May 30, 2024, from <http://www.palekarzerobudgetspiritualfarming.org/>
- Palekar, S. (2019). How to practice zero budget spiritual farming? (Telugu version, p. 64). Amaravathi, Maharashtra: Zero Budget Spiritual Farming Research Development & Extension Movement.
- Patel, S. K., Sharma, A., & Singh, G. S. (2020). Traditional agricultural practices in India: An approach for environmental sustainability and food security. *Energy, Ecology and Environment*, 5, 253–271. <https://doi.org/10.1007/s40974-020-00158-2>
- Pretty, J. (2008). Agricultural sustainability: Concepts, principles, and evidence. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1491), 447–465. <https://doi.org/10.1098/rstb.2007.2163>
- Rana, Harshdeepsinh and Patel, J. K. (2022) A scale to measure attitude of farmers towards zero budget natural farming. *Gujarat Journal of Extension Education*, 34(1):1-5. <https://doi.org/10.56572/gjoe.2022.34.1.0001>.
- Rohan A. Gamit and Vinaya Kumar H. M. (2022). Farmers attitude towards zerobudget natural farming. *Guj. J. Ext. Edu.* 34 (1):41-46. <https://doi.org/10.56572/gjoe.2022.34.2.0010>
- Suresh, A., Krishnan, P., Jha, G. K., & Reddy, A. A. (2022). Agricultural sustainability and its trends in India: A macro-level index-based empirical evaluation. *Sustainability*, 14(5), 2540. <https://doi.org/10.3390/su14052540>
- Tahat, M., Alananbeh, M., Othman, K., & Leskovar, D. (2020). Soil health and sustainable agriculture. *Sustainability*, 12(12), 4859. <https://doi.org/10.3390/su12124859>
- Touch, V., Tan, D. K. Y., Cook, B. R., Liu, D. L., Cross, R., Tran, T. A., Utomo, A., Yous, S., Grunbuhel, C., & Cowie, A. (2024). Smallholder farmers' challenges and opportunities: Implications for agricultural production, environment and food security. *Journal of Environmental Management*, 370, 122536. <https://doi.org/10.1016/j.jenvman.2024.122536>

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