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Perception of farmers on attributes of zero budget natural farming

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Abstract

In India, a country deeply rooted in agricultural traditions, the emergence of Zero Budget Natural Farming (ZBNF) has marked a significant shift in the way farmers cultivate their crops. ZBNF is a revolutionary agricultural technique that emphasizes minimal external inputs, zero chemical pesticides, and a strong focus on natural and sustainable farming practices. This approach has gained immense popularity in India and is gradually transforming the agricultural landscape of the country. In the study, perceived attributes of ZBNF were studied in terms of relative advantage, compatibility, complexity, trialability, observability and predictability. The study was conducted in YSR Kadapa district of Andhra Pradesh and Wardha district of Maharashtra purposively. Majority of farmers in Andhra Pradesh (61.25%) and Maharashtra (58.75%) had high level of perception. Majority of the farmers had high level of perception in terms of relative advantage, compatibility, complexity, trialability, observability and predictability in both the states for ZBNF practices.

Keywords: Perception, zero budget natural farming, relative advantage, compatibility

Introduction

Agriculture remains the backbone of the Indian economy, employing nearly 58% of the population and contributing significantly to the nation's GDP (Sharma, 2023) ^[4]. However, the sector faces numerous challenges, including soil degradation, declining productivity, increased dependence on chemical inputs, and rising debt among farmers. Conventional farming, which relies heavily on synthetic fertilizers, pesticides, and high-input costs, has exacerbated these issues, prompting the need for sustainable agricultural alternatives. One such alternative gaining traction in India is Zero Budget Natural Farming (ZBNF), a chemical-free farming system that minimizes external inputs and promotes ecological balance (Palekar, 2006) ^[12]. This research explores farmers' perceptions regarding the attributes of ZBNF in the states of Andhra Pradesh and Maharashtra, where this model has witnessed notable adoption and institutional support.

Zero Budget Natural Farming system is based on four core principles: Jeevamrut (microbial culture), Bijamrut (seed treatment), Acchadana (mulching), and Waaphasa (moisture retention) (Palekar, 2006) ^[12]. These techniques aim to enhance soil fertility, reduce dependence on external inputs, and increase farm resilience to climate variability (Khadse *et al.*, 2018) ^[6]. Unlike conventional farming, ZBNF encourages the use of locally available materials, thereby significantly reducing production costs and financial risks associated with agriculture (Pretty *et al.*, 2014) ^[13]. The Andhra Pradesh Community-Managed Natural Farming (APCNF) initiative has set ambitious targets to transition six million farmers to natural farming by 2030 (Reddy *et al.*, 2021) ^[14]. Maharashtra has also witnessed an increasing interest in ZBNF, particularly among smallholder farmers who seek cost-effective, sustainable farming solutions (Gowda & Seema, 2020) ^[5]. Despite these efforts, the widespread adoption of ZBNF is contingent on farmers' perceptions of its economic viability, ease of implementation, and agronomic benefits. Some farmers view ZBNF as a reliable and sustainable alternative, while others remain skeptical due to concerns about yield stability, transition challenges, and marketability of naturally grown produce (Bharucha *et al.*, 2020) ^[2].

Understanding these perceptions is critical for scaling up ZBNF and addressing the concerns of potential adopters. This study aims to evaluate farmers' awareness, experiences related to ZBNF in Andhra Pradesh and Maharashtra. Specifically, it seeks to assess their level of understanding, perceptions of its economic and environmental benefits, and barriers to adoption. Furthermore, the study explores the role of government policies, extension services, and peer influence in shaping farmers' attitudes toward ZBNF. By addressing these research objectives, this study will provide valuable insights into the factors influencing the acceptance and sustainability of natural farming practices in India. The adoption of agricultural innovations depends on key attributes such as relative advantage, compatibility with existing practices, complexity, trialability, and observability (Rogers, 2014) [16]. Farmers' willingness to transition to ZBNF is influenced by their perception of these attributes. Perception-based studies are inherently subjective, necessitating careful interpretation of results. Nonetheless, the study's insights will be valuable for policymakers, extension agencies, and agricultural scientists seeking to enhance ZBNF adoption and support farmers in

transitioning toward sustainable farming models.

Methodology

Attributes refer to qualities and characteristics possessed by an object. According to Rogers, 1995 [15] any innovation has attributes *viz*, relative advantage, compatibility, complexity, trialability and observability. In this study, perceived attributes of ZBNF were studied in terms of relative advantage, compatibility, complexity, trialability, observability and predictability. The study was conducted in YSR Kadapa district of Andhra Pradesh and Wardha district of Maharashtra purposively. Eighty (80) ZBNF practicing farmers and forty (40) Non-ZBNF farmers were selected from each states were selected randomly. A total of 240 farmers were selected for the study. The schedule was developed to study perceived attributes of ZBNF based on the scale developed by Shireesha (2015) with the suitable modifications. Three-point continuum (Agreed=3, Partially Agreed=2, Disagreed=1) was used to measure the perceived attributes of the ZBNF.

Results and Discussion

Table 1: Distribution of ZBNF and Non-ZBNF farmers based on their level of perception on attributes of ZBNF (Andhra Pradesh) (n =120)

Sr. No.	Perceived attributes category	Class interval		ZBNF (n=80)		Non-ZBNF (n=40)	
		ZBNF	Non-ZBNF	f	%	f	%
1.	Not perceived	25 – 39	27 – 41	12	15.00	13	32.50
2.	Positive perceived	39 – 52	41 – 55	19	23.75	21	52.50
3.	Highly perceived	52 - 66	55 - 69	49	61.25	06	15.00

Table 2: Distribution of ZBNF and Non-ZBNF farmers based on their level of perception on attributes of ZBNF (Maharashtra) (n =120)

Sr. No.	Perceived attributes category	Class interval		ZBNF (n=80)		Non-ZBNF (n=40)	
		ZBNF	Non-ZBNF	f	%	f	%
1. 1	Not perceived	25 – 39	27 – 41	16	20.00	10	25.00
2. 2	Positive perceived	39 – 52	41 – 55	47	58.75	23	57.50
3. 3	Highly perceived	52 - 66	55 - 69	17	21.25	07	17.50

Table 1 and Table 2, revealed that the different attributes of ZBNF perceived by farmers in Andhra Pradesh and majority of the ZBNF farmers (61.25%) had highly perceived whereas in case of Non-ZBNF farmers (52.50%) had positively perceived on attributes of ZBNF. Majority of the ZBNF farmers highly perceived to positive perceived on attributes of ZBNF. Majority of the Non-ZBNF farmers positive perceived to not perceived category. In case of Maharashtra majority of ZBNF farmers (58.75%) positive perceived and in case of Non-ZBNF farmers, majority of farmers belongs to positive perceived category (57.50%) followed by not perceived (25.00%) and highly perceived category (17.50%). In the study conducted by Sarada, *et al.*, (2018) [17] on perception of the farmers on zero budget natural farming in Prakasam district of Andhra Pradesh and found that the majority (65.00%) of the farmers had medium perception on ZBNF followed by high (18.33%) and low (16.67%). The study on natural farming was carried out in the Andhra Pradesh district of Visakhapatnam by Saradhi, K. V. *et al.*, (2021) [18] and found that the majority of ZBNF farmers had greater levels of perception than non-ZBNF farmers (55% versus 51.66%). The study came to the conclusion that the respondents' main challenges in the study area were a lack of adequate marketing facilities and a high demand for labour. In addition, our findings are consistent with several studies showing that organic farming (e.g., natural farming) improves soil properties compared to

conventional farming by Liao, *et al.*, (2019) [10], Liao, *et al.*, (2018) [9] and Tu, *et al.*, (2006) [19].

Perceived attributes of ZBNF: Relative advantage

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. The relative advantage of ZBNF studied and in Andhra Pradesh, majority of the ZBNF farmers (85.00%) and Non-ZBNF farmers (75.00%) agreed that ZBNF practices having advantage of lower production costs followed by majority of ZBNF farmers (87.50%) and Non- ZBNF farmers (72.50%) realized the use of locally available resources/inputs for ZBNF farmers favours the adoption of ZBNF practices. Majority of ZBNF farmers (90.00%) and Non-ZBNF farmers (65%) fully agreed with naturally decomposition of farm waste, the farm manures would be available by natural decomposition method. In case of Maharashtra, majority of ZBNF farmers (91.25%) and had agreed that the by adopting ZBNF practices the cost of production decreases as compared to Non-ZBNF practicing farmers (75.00%). The availability and use of locally available resources/Inputs in case of ZBNF farmers (86.25%) and Non-ZBNF farmers (72.50%) agreed that inputs are available locally. Majority of ZBNF farmers (73.75%) and Non-ZBNF farmers (77.50%) agreed that the ZBNF provided more net profitability. The similar results were also observed by Duddigan *et al.*, (2022) [13] that the perception of the ZBNF

system is that the amendments applied strongly increase soil biodiversity and, as a result, this diverse below ground biological community provides multiple ecosystem services,

including the supply of nutrients, carbon sequestration, and resilience to external stresses. The study also supported by Anand *et al.*, (2020), Naresh *et al.*, (2018) ^[11].

Table 3: Distribution of respondents according to their perceptions regarding attributes of ZBNF (Andhra Pradesh) (n=120)

Attribute of ZBNF over Non –ZBNF													
Sr. No.	Components	Agree				Partially Agree				Disagree			
		ZBNF (n=80)		Non-ZBNF (n=40)		ZBNF (n=80)		Non-ZBNF (n=40)		ZBNF (n=80)		Non-ZBNF (n=40)	
		f	%	f	%	f	%	f	%	f	%	f	%
	Relative Advantage												
	Low production costs	68	85.00	31	77.50	10	12.50	06	15.00	02	02.50	03	07.50
	Use of locally available resources/Inputs	70	87.50	29	72.50	08	10.00	09	22.50	02	02.50	02	05.00
	Chemical free farm manures	63	78.75	30	75.00	12	15.00	07	17.50	05	06.25	03	07.50
	Naturally decomposition of farm waste	72	90.00	26	65.00	05	06.25	08	20.00	03	03.75	06	15.00
	Resources sharing from one enterprise as output to other as input	46	57.50	24	60.00	28	35.00	10	25.00	06	07.50	06	15.00
	Net profitability is more	57	71.25	27	67.50	16	20.00	08	20.00	07	08.75	05	12.50
	Compatibility												
	Culturally compatible	73	91.25	32	80.00	05	06.25	06	15.00	02	02.50	02	05.00
	Easy to adopt because of use of locally available inputs	64	80.00	33	82.50	13	16.25	05	12.50	03	03.75	02	05.00
	Practically viable	68	85.00	27	67.50	10	12.50	10	25.00	02	02.50	03	07.50
	Socially acceptable	53	66.25	26	65.00	19	23.75	09	22.50	08	10.00	05	12.50
	Ecologically sustainable and continued adoption	67	83.75	30	75.00	09	11.25	06	15.00	04	04.00	04	10.00
3.	Complexity												
	Difficulty in input application	12	15.00	06	15.00	14	17.50	10	25.00	54	67.50	24	60.00
	Difficulty in preparation of arkas and urine/dung based inputs	08	10.00	04	10.00	12	15.00	11	27.50	60	75.00	25	62.50
	Difficulty in weed management	06	07.50	05	12.50	21	26.25	09	22.50	53	66.25	26	65.00
	Difficulty in livestock management	10	12.50	04	10.00	18	22.50	08	20.00	52	65.00	28	70.00
	Lack of availability of desi cows	07	08.75	05	12.50	09	11.25	07	17.50	64	80.00	28	70.00
4.	Trialability												
a)	Availability in small scale of ZBNF inputs	72	90.00	29	72.50	05	06.25	08	20.00	03	03.75	03	07.50
b)	Easy preparation of ZBNF inputs in small scale	65	81.25	27	67.50	12	15.00	09	22.50	03	03.75	04	10.00
c)	Easy application of ZBNF inputs over small areas	62	77.50	31	77.50	13	16.25	07	17.50	05	06.25	02	06.25
d)	Easy to monitor ZBNF fields in small scale	57	71.25	30	75.00	16	20.00	06	15.00	07	08.75	04	10.00
5.	Observability												
a)	Initial low yields and gradual increase in yields	24	30.00	31	77.50	46	57.50	06	15.00	10	12.50	02	06.25
b)	Low incidence of pests and diseases	53	66.25	29	72.50	19	23.75	07	17.50	08	10.00	04	10.00
c)	Good drought tolerance	61	76.25	28	70.00	15	18.75	09	22.50	04	04.00	03	07.25
d)	Low cost of cultivation	73	91.25	32	80.00	04	05.00	07	17.50	03	03.75	01	02.50
e)	Good market price	62	77.50	31	77.50	16	20.00	06	15.00	02	02.50	03	07.25
6.	Predictability												
a)	Promotes soil aeration	74	92.50	28	70.00	04	05.00	07	17.50	02	02.50	05	12.50
b)	Improvement in human health	59	73.75	27	67.50	14	17.50	08	20.00	07	08.75	05	12.50
c)	Good quality of produce	54	67.50	32	80.00	18	22.50	06	15.00	08	10.00	02	06.25
d)	High consumer preference	67	83.75	29	72.50	10	12.50	05	12.50	03	03.75	06	15.00

Table 4: Distribution of respondents according to their perceptions regarding attributes of ZBNF (Maharashtra) (n=120)

Attribute of ZBNF over Non –ZBNF													
Sr. No.	Components	Agree				Partially Agree				Disagree			
		ZBNF (n=80)		Non-ZBNF (n=40)		ZBNF (n=80)		Non-ZBNF (n=40)		ZBNF (n=80)		Non-ZBNF (n=40)	
		f	%	f	%	f	%	f	%	f	%	F	%
1.	Relative Advantage												
	Low production costs	73	91.25	30	75.00	05	06.25	07	17.50	02	02.50	03	07.50
	Use of locally available resources/Inputs	69	86.25	29	72.50	07	08.75	09	22.50	04	05.00	02	05.00
	Chemical free farm manures	61	76.25	27	67.50	10	12.50	10	25.00	09	11.25	03	07.50
	Naturally decomposition of farm waste	74	92.50	28	70.00	03	03.75	08	20.00	03	03.75	04	10.00
	Resources sharing from one enterprise as output to other as input.	64	80.00	24	60.00	11	13.75	11	27.50	05	06.25	05	12.50
	Net profitability is more	59	73.75	31	77.50	18	22.50	07	17.50	03	03.75	02	05.00
2.	Compatibility												
	Culturally compatible	64	80.00	24	60.00	13	16.25	09	22.50	03	03.75	07	17.50
	Easy to adopt because of use of locally available inputs	72	90.00	32	80.00	05	06.25	06	15.00	03	03.75	02	05.00
	Practically viable	70	87.50	33	82.50	06	07.50	04	10.00	04	05.00	03	07.50
	Socially acceptable	61	76.25	31	77.50	14	17.50	05	12.50	05	06.25	04	10.00
	Ecologically sustainable and continued adoption	74	92.50	29	72.50	04	05.00	09	22.50	02	02.50	02	05.00
3.	Complexity												
a)	Difficulty in input application	14	17.50	04	10.00	12	15.00	08	20.00	54	67.50	28	70.00

b)	Difficulty in preparation of arkas and urine/dung based inputs	12	15.00	04	10.00	09	11.25	05	12.50	59	73.75	31	77.50
c)	Difficulty in weed management	09	11.25	03	07.50	18	22.50	04	10.00	53	66.25	33	82.50
d)	Difficulty in livestock management	12	15.00	05	12.50	18	22.50	04	10.00	50	62.50	31	77.50
e)	Lack of availability of desi cows	09	11.25	05	12.50	18	22.50	05	12.50	53	66.25	30	75.00
4.	Trialability												
a)	Availability in small scale of ZBNF inputs	70	87.50	28	70.00	07	08.75	07	17.50	03	03.75	05	12.50
b)	Easy preparation of ZBNF inputs in small scale	68	85.00	31	77.50	09	11.25	05	12.50	03	03.75	04	10.00
c)	Easy application of ZBNF inputs over small areas	64	80.00	32	80.00	11	13.75	05	12.50	05	06.25	03	07.50
d)	Easy to monitor ZBNF fields in small scale	61	76.25	29	72.50	11	13.75	06	15.00	08	10.00	05	12.50
5.	Observability												
a)	Initial low yields and gradual increase in yields	21	26.25	31	77.50	49	61.25	07	17.50	10	12.50	02	05.00
b)	Low incidence of pests and diseases	59	73.75	30	75.00	10	12.50	06	15.00	11	13.75	04	10.00
c)	Good drought tolerance	64	80.00	28	70.00	12	15.00	08	20.00	04	05.00	04	10.00
d)	Low cost of cultivation	72	90.00	32	80.00	03	03.75	07	17.50	03	03.75	01	02.50
e)	Good market price	58	72.50	31	77.50	15	18.75	05	12.50	07	08.75	04	10.00
6.	Predictability												
a)	Promotes soil aeration	70	87.50	28	70.00	06	07.50	09	22.50	04	03.75	03	07.50
b)	Improvement in human health	58	72.50	27	67.50	15	18.75	10	25.00	07	08.75	03	07.50
c)	Good quality of produce	56	70.00	32	80.00	16	20.00	06	15.00	08	10.00	02	05.00
d)	High consumer preference	71	88.75	29	72.50	07	08.75	07	17.50	02	02.50	04	10.00

Perceived attributes of ZBNF: Compatibility

Compatibility is the degree to which Zero Budget Natural farming is compatible and consistent with the existing value, their situation and past experiences of the respondents viz., culturally compatible, practically feasible, socially acceptable and ecologically sustainable. In Andhra Pradesh, the majority of ZBNF farmers (91.25%) and Non-ZBNF (80.00%) farmers agreed that the ZBNF practices were culturally compatible followed by majority of ZBNF practicing farmers (80.00%) and Non-ZBNF farmers (82.50%) agreed on easy to adopt because of use of locally available inputs. In case of Maharashtra, majority of ZBNF farmers (80.00%) and Non-ZBNF farmers (60.00%) believed that ZBNF practices were culturally compatible followed by majority of ZBNF practicing farmers (90.00%) and Non-ZBNF farmers (80.00%) agreed by on easy to adopt because of use of locally available inputs. In Andhra Pradesh, majority of ZBNF farmers (67.50%) and Non-ZBNF farmers (60.00%) didn't not found any difficulty in input application followed by most of the ZBNF farmers (75.00%) and Non-ZBNF farmers (62.50%) were didn't not found any difficulty in preparation of arkas and urine/dung based input. In Maharashtra, majority of Non-ZBNF farmers (70.00%) and ZBNF farmers (67.50%) were dis agreed with difficulty in input application followed by most of the Non-ZBNF farmers (77.50%) and ZBNF farmers (73.75%) were not agreed with difficulty in preparation of arkas and urine/dung based inputs. The similar results were also observed by Khurana & Kumar (2020) ^[7] that ZBNF promotes the cultivation of diverse species of crops depending on site-specific agro-climatic conditions. With the help of diversified/mixed cropping practices, farmers can harvest different types of produce at regular interval from small parcels of land and earn regular incomes.

Perceived attributes of ZBNF: Complexity

Complexity is the degree to which Zero Budget Natural farming is relatively difficult to understand and use it was measured in terms of difficulty in input application, Difficulty in preparation of arkas and urine/dung based inputs, difficulty in weed management, difficulty in livestock management and lack of availability of desi cows. In Andhra Pradesh, majority of ZBNF farmers (90.00%) and Non-ZBNF farmers (72.50%) were strongly agreed that it

was easy to procure ZBNF inputs on small scale followed by majority of ZBNF farmers (85.00%) and Non-ZBNF farmers (67.50%) strongly agreed that it was easy to prepare ZBNF inputs on small scale. In the state of Maharashtra, most of the ZBNF farmers (87.50%) and Non-ZBNF farmers (70.00%) were strongly agreed that it was easy to procure ZBNF inputs followed by majority of ZBNF farmers (85.00%) and Non-ZBNF farmers (77.50%) strongly agreed that it was easy to prepare ZBNF inputs on small scale.

Perceived attributes of ZBNF: Trialability

Trialability is the 'degree to which Zero Budget Natural farming practices can be experimentally practiced in a small scale for assessing the advantage' it was measured in terms of availability in small scale of ZBNF inputs, easy preparation of ZBNF inputs in small scale, easy application of ZBNF inputs over small areas and easy to monitor ZBNF fields in small scale. In Andhra Pradesh, majority of ZBNF farmers (90.00%) and Non-ZBNF farmers (72.50%) were strongly agreed that it was easy to procure ZBNF inputs on small scale followed by majority of ZBNF farmers (85.00%) and Non-ZBNF farmers (67.50%) strongly agreed that it was easy to prepare ZBNF inputs on small scale. In the state of Maharashtra, most of the ZBNF farmers (87.50%) and Non-ZBNF farmers (70.00%) were strongly agreed that it was easy to procure ZBNF inputs followed by majority of ZBNF farmers (85.00%) and Non-ZBNF farmers (77.50%) strongly agreed that it was easy to prepare ZBNF inputs on small scale. In case of Andhra Pradesh state, majority of ZBNF farmers (57.50%) partially agreed and Non-ZBNF farmers (77.50%) strongly agreed with initial low yields and gradual increase in yields followed by majority of ZBNF farmers (66.25%) and Non-ZBNF farmers (72.50%) strongly agreed of low incidence of pests and diseases. In the state of Maharashtra, majority of Non-ZBNF farmers (61.25%) strongly agreed and ZBNF farmers (57.50%) partially agreed with initial low yields and gradual increase in yields followed by majority of Non-ZBNF farmers (75.00%) and ZBNF farmers (73.75%) strongly agreed of low incidence of pests and diseases.

Perceived attributes of ZBNF: Observability: Observability is the degree to which results of Zero Budget

Natural farming practices were observed practically it was measured in terms of initial low yields and gradual increase in yields, low incidence of pests and diseases, good drought tolerance, low cost of cultivation and good market price. In Andhra Pradesh state, Majority of ZBNF farmers (57.50%) partially agreed and Non-ZBNF farmers (77.50%) strongly agreed with initial low yields and gradual increase in yields because the yield stability starts after three years in ZBNF. Majority of ZBNF farmers (66.25%) and Non-ZBNF farmers (72.50%) strongly agreed of low incidence of pests and diseases because, of the ZBNF farmers follow IPM practices which help to control the pests and diseases. In case of good drought tolerance capacity, majority of ZBNF farmers (76.25%) and Non-ZBNF farmers (70.00%) strongly agreed because most of the ZBNF practices help to improve the soil moisture holding capacity of the soils helping the crop to tolerate the drought conditions. In case of low cost of cultivation, ZBNF farmers (91.25%) and Non-ZBNF farmers (80.00%) strongly agreed due to elimination of usage of off-farm resources. Majority of ZBNF farmers and Non-ZBNF farmers (77.50%) agreed with good market price for ZBNF produce due to the ZBNF farmers getting extra price than MSP for their produce.

In Maharashtra, Majority of Non-ZBNF farmers (61.25%) strongly agreed and ZBNF farmers (57.50%) partially agreed with initial low yields and gradual increase in yields because the yield stability starts after three years in ZBNF. Majority of Non-ZBNF farmers (75.00%) and ZBNF farmers (73.75%) strongly agreed of low incidence of pests and diseases because, of the ZBNF farmers follow IPM practices which help to control the pests and diseases. In case of good drought tolerance capacity, majority of ZBNF farmers (80.00%) and Non-ZBNF farmers (70.00%) strongly agreed because, most of the ZBNF practices help to improve the soil moisture holding capacity of the soils helping the crop to tolerate the drought conditions. In case of low cost of cultivation, ZBNF farmers (90.00%) and Non-ZBNF farmers (80.00%) strongly agreed due to elimination of usage of off-farm resources. Majority of Non-ZBNF farmers (77.50%) and ZBNF farmers (72.50%) agreed with good market price for ZBNF produce due to the ZBNF farmers getting extra price than MSP for their produce.

Perceived attributes of ZBNF: Predictability

Predictability is the 'degree to which the progress and consequences of the Zero Budget Natural farming can be anticipated'. In Andhra Pradesh, with regard to predictability, ZBNF farmers (92.50%) and Non-ZBNF (70.00%) farmers agreed that it promotes soil aeration. Majority of ZBNF farmers (73.75%) and Non-ZBNF farmers (67.50%) agreed on prediction of improvement in human health by consuming the food free from chemical. In case of good quality of produce, Non-ZBNF farmers (80.00%) and ZBNF farmers (67.50%) strongly agreed and prediction of high consumer preference, ZBNF farmers (83.75%) and Non-ZBNF farmers (72.50%) were strongly agreed. In Maharashtra, as perceived by majority of ZBNF farmers (87.50%) and Non-ZBNF farmers (70.00%) agreed that ZBNF has the capacity that it improves soil aeration. In case of improvement in human health, ZBNF farmers (72.50%) strongly agreed to the statement and Non-ZBNF (67.50%) were strongly agreed to the fact that good chemical free food helps in health improvement. The

majority of Non-ZBNF farmers (80%) and ZBNF farmers (70.00%) strongly agreed about the good quality of produce ensure good health. Prediction of high consumer preference, ZBNF farmers (88.75%) and Non-ZBNF farmers (72.50%) strongly agreed. Kumar, (2022) ^[8] in his study on natural farming in Andhra Pradesh reported that the natural farmers will gain more from lower cultivation costs, higher crop yields, higher earnings, better, healthier, more nutrient-rich food, environmental preservation, and reduced soil erosion. In addition, ecological farming requires less capital, which lowers debt loads.

Conclusion

The study highlights that farmers in Andhra Pradesh and Maharashtra have a generally positive perception of Zero Budget Natural Farming (ZBNF), with ZBNF farmers demonstrating higher levels of acceptance compared to their non-ZBNF counterparts. In Andhra Pradesh, a majority (61.25%) of ZBNF farmers highly perceived the benefits of ZBNF, while 52.50% of non-ZBNF farmers had a positive perception. Similarly, in Maharashtra, 58.75% of ZBNF farmers and 57.50% of non-ZBNF farmers positively perceived ZBNF attributes. The findings align with previous research, affirming the benefits of ZBNF in reducing production costs, promoting sustainable farming practices, and improving soil health and biodiversity. Farmers acknowledged the ease of adopting ZBNF due to the availability of locally sourced inputs and its compatibility with traditional agricultural practices. However, challenges such as inadequate market linkages and high labor demand remain key concerns. Addressing these issues through policy interventions and support mechanisms can enhance the scalability and long-term sustainability of ZBNF.

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