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FARMERS' ATTITUDE TOWARDS ZERO BUDGET NATURAL FARMING

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ABSTRACT

India has always had an advantage and strength in natural farming. Natural products are currently in the spotlight on a local, national, and international level due to changes in global consumption patterns, consumer health awareness, and the growing importance of sustainability. The study was conducted on farmers' attitude towards Zero Budget Natural Farming (ZBNF) practices in Anand district by selected sample size of 120 farmers based on highest number of the farmers who had gone through training on ZBNF. The data were collected through personal interview and analyzed by using appropriate statistical tools. Majority of the respondents had favourable attitude towards ZBNF, followed by a neutral attitude and a strongly favourable attitude towards ZBNF. The independent variables viz., innovativeness, training received, economic motivation and farm mass media exposure had a positive and significant relationship with farmers' attitude towards ZBNF practices. Further, variables viz., education, risk orientation, size of landholding, social participation, farm mass media exposure, extension contact, economic motivation, innovativeness, farming experience, herd size, training received and gender had maximum positive indirect effect on farmers' attitude towards ZBNF practices.

Keywords: *attitude, innovativeness, zero-budget, natural farming, path analysis*

INTRODUCTION

In India, the Non-Governmental Organization (NGO) sector and urban middle-class activists, rather than peasant movements, have historically led and articulated movements for sustainable agriculture (Brown, 2018). On the other hand, despite their significant accomplishments, successful cases in sustainable agriculture have largely remained "islands of success" and have not spread widely enough to constitute a "wave of change" (Gregory *et al*., 2017; Vinaya *et al.,* 2022).

The Zero Budget Natural Farming can be split into two words namely Zero Budget which means minimising cost of cultivation by eliminating the purchase of off-farm resources and Natural Farming means farming with nature which eliminates the usage of chemicals like fertilizers, pesticides, fungicides and herbicides (Padma *et al*. 2022). Our argument is that the Zero Budget Natural Farming (ZBNF) movement is an exception to these developments. This is primarily a rural movement made up of middle and small landholding peasants that spontaneously spread throughout the countryside. It is not a movement of peasants from marginal classes or castes, although it does have many urban middle class members (Khadse *et al*. 2017). ZBNF is a holistic alternative to high input cost based agriculture. Natural farming methods like the ZBNF, which lessen farmers' need on loans to purchase inputs they cannot afford, are being evaluated as part of the Central government's promise to double farmers' income by 2022 (Anon. 2022).

ZBNF is based on four pillers (Bijamrita, Jivamrita, Whapahasa and Acchadana). Bijamrita (a seed treatment) and Jivamrita (a soil inoculant) are microbial mixtures that can be prepared in less than 48 hours. For individuals without access to water or labour, a dry version of Jivamrita known as Ghanajivamrita is recommended; this can be produced once and preserved for a year. Both are sources of helpful microorganisms that protect plants and promote plant growth (Khadse and Rosset, 2019). Contrary to conventional agriculture, Palekar thinks that the soil contains all of the nutrients required for plant growth and that no further inputs are required; instead, the existing nutrients must be "unlocked" and made bioavailable by jiwamruta (Palekar, 2005) - this idea is called Annapurna by Palekar.

Attitude is the degree of positive or negative effect with some psychological objects like symbol, phrase, slogan, person, institutions, or idea towards which people can differ in varying degrees from the point of view of social psychology (Shankaraiah, 2011). It is preparedness of people to respond in a certain way towards social objects or phenomena. Further, attitude is defined as the degree of encouraging or depressing feeling of farmers towards ZBNF. Attitude is a way of thinking, acting or feeling of a person towards a situation or cause. It is accepted fact that an attitude of an individual plays an important role in determining his behaviour. Thus, attitude of the farmers towards ZBNF

practices is certainly an important determinant for motivating them to avail maximum use of ZBNF practices (Rana, 2021). To understand role of this factor, information regarding attitude of the farmers towards ZBNF was studied with the following objectives

Objectives

(1) To study the farmers' attitude towards ZBNF practices

(2) To ascertain the relationship between selected characteristics of the farmers and their attitude towards ZBNF practices

METHODOLOGY

Ex-Post-Facto research design was used in the present study (Kerlinger, F. N., 1976).The present study was carried out in Anand district which is located in middle Gujarat. Four talukas (Borsad, Anklav, Khambhat and Umreth) were selected based on highest number of the farmers who had taken training on ZBNF from ATMA, Anand. From each taluka three villages were selected and from each villages 10 respondents were selected. Thus, total 120 respondents selected for the study. The attitude scale developed by Rana (2021) was used to measure the attitude of farmers about ZBNF practices. The respondents were grouped under five categories *viz*., strongly unfavourable, unfavourable, neutral, favourable and strongly favourable attitude towards ZBNF practices.

RESULTS AND DISCUSSION

Attitude towards ZBNF practices

From the Table 1 it can be inferred that statement viz., I believe that ZBNF is best alternative farming system in present obtained 1st rank, followed by Adoption of ZBNF is blunder as market for ZBNF produce does not exist yet (ranked 2nd), I feel that adoption of ZBNF is gambling (ranked 3rd), I believe that reliance on ZBNF will end debt cycle of farmers (ranked 4th), ZBNF practices have little bit edge over conventional practices (ranked 5th), I feel that practices of ZBNF are more tedious (ranked 6th), Use of ZBNF practices is best option to produce chemical residue free food (ranked 7th), I feel that production through ZBNF will fetch more prices (ranked 8th), I prefer ZBNF due to their eco-friendly or environmental friendly character (ranked 9th), I will adopt ZBNF as I believe that the killing of living organisms is some sort of sin (ranked 10th), I believe that ZBNF is most effective to avoid human health hazards effect of modern farming (ranked 11th) and statement of I want quick result to my crop so I will not prefer ZBNF (ranked 12th).

Table 1: Distribution of the respondents as per their statement wise attitude towards ZBNFpractices

(n=120)

Sr. No.	Statement	SA	A	UD	DA	SDA	Mean score	Rank
1	**ZBNF reduces cost of cultivation to a greater extent**	40 (33.33)	31 (25.84)	48 (40.00)	01 (0.83)	00 (0.00)	3.94	III
2	**Soil will be enriched with ZBNF**	38 (31.67)	31 (25.83)	48 (40.00)	01 (0.83)	02 (1.67)	3.84	VIII
3	**Purchasing and maintaining indigenous cow is difficult**	38 (31.67)	40 (33.33)	33 (27.50)	04 (3.33)	05 (4.17)	3.86	VII
4	**ZBNF increases micro-organisms and earth worms in soil**	37 (30.83)	43 (35.84)	38 (31.67)	01 (0.83)	01 (0.83)	3.95	II
5	**Preparation of asthras is difficult**	30 (25.00)	38 (31.67)	43 (35.83)	05 (4.17)	04 (3.33)	3.72	XIV
6	**ZBNF gives sustainable yields**	36 (30.00)	47 (39.17)	31 (25.83)	02 (1.67)	04 (3.33)	3.93	IV
7	**ZBNF facilitates natural enemies population**	37 (30.83)	36 (30.00)	37 (30.83)	07 (5.84)	03 (2.50)	3.81	X
8	**Adoption of ZBNF practices is practically not feasible**	42 (35.00)	34 (28.33)	36 (30.00)	05 (4.17)	03 (2.50)	3.87	VI
9	**Quality production is possible with ZBNF**	45 (37.50)	36 (30.00)	32 (26.67)	03 (2.50)	04 (3.33)	3.96	I
10	**ZBNF gives more net returns**	31 (25.83)	42 (35.00)	38 (31.67)	07 (5.83)	02 (1.67)	3.78	XII

Sr. No.	Statement	SA	A	UD	DA	SDA	Mean score	Rank
11	**Adoption of ZBNF practices is highly risky, hence it is not advisable to follow the same**	33 (27.50)	41 (34.17)	28 (23.33)	10 (8.33)	08 (6.67)	3.65	XIX
12	**It is worthful to adopt ZBNF practices even by suffering the initial**	41 (34.17)	40 (33.33)	32 (26.67)	04 (3.33)	03 (2.50)	3.89	V
13	**ZBNF practice should be practiced by all farmers**	35 (29.17)	40 (33.33)	36 (30.00)	04 (3.33)	05 (4.17)	3.80	XI
14	**ZBNF is difficult to practice**	31 (25.83)	43 (35.84)	32 (26.67)	07 (5.83)	07 (5.83)	3.69	XVII
15	**ZBNF is relatively advantageous over chemical farming**	27 (22.50)	45 (37.50)	36 (30.00)	05 (4.17)	07 (5.83)	3.67	XVIII
16	**It is possible to sell ZBNF products at higher price/demand**	31 (25.83)	47 (39.17)	27 (22.50)	06 (5.00)	09 (7.50)	3.73	XIII
17	**Availability of traditional varieties seed is difficult**	37 (30.83)	35 (29.17)	32 (26.67)	06 (5.00)	10 (8.33)	3.70	XVI
18	**ZBNF is feasible to adopt in present farming situation**	37 (30.83)	38 (31.67)	35 (29.17)	06 (5.00)	04 (3.33)	3.82	IX
19	**It is possible to solve our environmental problems through ZBNF**	30 (25.00)	40 (33.33)	40 (33.33)	05 (4.17)	05 (4.17)	3.71	XV
20	**Adoption of ZBNF on large scale is possible**	33 (27.50)	39 (32.50)	26 (21.67)	10 (8.33)	12 (10.00)	3.59	XX

Overall attitude towards ZBNF practices

Table 2: Distribution of the respondents according to their overall attitude towards ZBNF practices (n=120)

Sr. No.	Category	Frequency	Per cent
1	**Strongly unfavourable** (12.00 to 21.60 score)	00	00.00
2	**Unfavourable** (21.61 to 31.20 score)	00	00.00
3	**Neutral** (31.21 to 40.80 score)	12	10.00
4	**Favourable** (40.81 to 50.40 score)	103	85.83
5	**Strongly favourable** (50.41 to 60.00 score)	05	04.17

Table 2 indicated that the great majority (85.83 per cent) of the respondents had favourable attitude towards ZBNF, followed by a neutral attitude (10.00 per cent) and a strongly favourable attitude (4.17 per cent) towards ZBNF. The results determined that most of the farmers had a favourable attitude toward ZBNF. The Gujarat government's recent mass campaigning on ZBNF through a series of training programs, gosthis, and seminars, combined with farmers' concerns regarding productivity and market availability of ZBNF, might be the likely explanation of this type of result. The study's findings align with the results of Asari *et al*., (2021), Kumar (2018), Patel *et al*., (2018), Patel and Chauhan (2020), Wankhade (2020) and Patel and Vyas (2021).

Relationship between selected characteristics of the farmers and their overall attitude towards ZBNF practices

Table 3: Correlation (r) between selected characteristics of the farmers and their attitude towards ZBNF practices (n=120)

Sr. No.	Variable	Correlation (r) value
X_1	**Age**	-0.009
X_2	**Education**	0.086
X_3	**Gender**	-0.031
X_4	**Farming experience**	-0.191*
X_5	**Size of family**	0.042
X_6	**Social Participation**	0.093
X_7	**Landholding**	-0.024
X_8	**Annual income**	0.023
X_9	**Herd size**	-0.144
X_{10}	**Farm mass media exposure**	0.191*
X_{11}	**Extension contact**	0.097
X_{12}	**Training received**	0.272**
X_{13}	**Economic motivation**	0.216*
X_{14}	**Risk orientation**	0.173
X_{15}	**Innovativeness**	0.340**

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

The independent variables *viz*., innovativeness

(0.340**), training received (0.272**), economic motivation (0.216*) and farm mass media exposure (0.191*) had a positive and significant relationship with farmers' attitude towards ZBNF practices, whereas the farming experience had a significant but negative relationship (-0.191*) with farmers attitude towards ZBNF practices. Thus, researchers may emphasise developing favourable attitudes towards ZBNF practices. To know the influence of independent variables both directly, as well as, through other variables, the correlation coefficient values indicated earlier were attempted for path analysis.

Step-wise regression analysis

In Table 4, the stepwise regression analysis suggests that the regression coefficients of the innovativeness and farming experience were found to be highly significant at 0.01 level of probability and training received was found to be significant at 0.05 level of probability.

These variables have a real influence on the predictive value towards attitude. The predictive power of the multiple regression techniques was estimated with the help of the coefficient of multiple determinations (R^2). The R^2 value is 0.187, which indicates about 18.70 per cent predication of a dependent variable through the independent variables listed below in Table 4.

The independent variables were ranked based on standard partial regression coefficient values to find their relative importance in predicting the dependent variable. Table 4 indicates rank order it is as innovativeness (Rank-I), farming experience (Rank-II) and training received (Rank-III).

Table 4: Step-wise regression analysis for farmers' attitude towards ZBNF practices (n=120)

Sr. No.	Independent variable	Partial regression coefficient	Standard error	't' value	Standard partial regression coefficient	Rank
x_{15}	**Innovativeness**	0.165	0.059	2.784**	0.262	I
x_4	**Farming experience**	-0.105	0.038	2.786**	0.237	II
x_{12}	**Training received**	0.702	0.345	2.034*	0.194	III

* Significant at 0.05 level of probability ** Significant at 0.01 level of probability $R^2 = 0.187$, Adjusted $R^2 = 0.166$, F= 8.91**

Path analysis

Table 5 showed that major variables contributing to the maximum direct positive effect on farmers' attitude towards ZBNF practices were training received, innovativeness, annual income, economic motivation, age, farm mass media exposure and size of a family in descending order, while risk orientation, extension contact, gender, social participation, education, herd size, size of landholding and farming experience contributing negative direct effect in descending order on farmers attitude towards ZBNF practices.

Table 5: Path coefficients showing the direct, total indirect and substantial indirect effect of selected characteristics of the farmers on their attitude towards ZBNF practices (n=120)

Sr. No.	Variables	Direct effect	Rank	Total indirect effect	Rank	Substantial indirect effect through	
						1	2
X_1	**Age**	0.0832	V	-0.0923	XIV	0.0723 (X12)	0.0345 (X15)
X_2	**Education**	-0.1635	XII	0.2494	I	0.0756 (X12)	0.0686 (X15)
X_3	**Gender**	-0.0344	X	0.0037	XII	0.0616 (X4)	0.0186 (X12)
X_4	**Farming experience**	-0.2722	XV	0.0811	IX	0.0530 (X1)	0.0446 (X12)
X_5	**Size of family**	0.0451	VII	-0.0031	XIII	0.0287 (X1)	0.0172 (X8)
X_6	**Social Participation**	-0.0547	XI	0.1475	IV	0.0670 (X12)	0.0630 (X4)
X_7	**Landholding**	-0.1880	XIV	0.1636	III	0.1149 (X8)	0.0555 (X12)
X_8	**Annual income**	0.2019	III	-0.1789	XV	0.0105 (X1)	0.0044 (X15)
X_9	**Herd size**	-0.1825	XIII	0.0389	X	0.0532 (X8)	0.0295 (X15)
X_{10}	**Farm mass media exposure**	0.0809	VI	0.1100	V	0.0829 (X15)	0.0731 (X12)
X_{11}	**Extension contact**	-0.0067	IX	0.1035	VI	0.0944 (X12)	0.0632 (X15)
X_{12}	**Training received**	0.2543	I	0.0180	XI	0.1146 (X15)	0.0237 (X1)
X_{13}	**Economic motivation**	0.1255	IV	0.0905	VII	0.0519 (X15)	0.0478 (X12)
X_{14}	**Risk orientation**	-0.0035	VIII	0.1767	II	0.0854 (X15)	0.0652 (X12)
X_{15}	**Innovativeness**	0.2512	II	0.0887	VIII	0.1160 (X12)	0.0267 (X10)

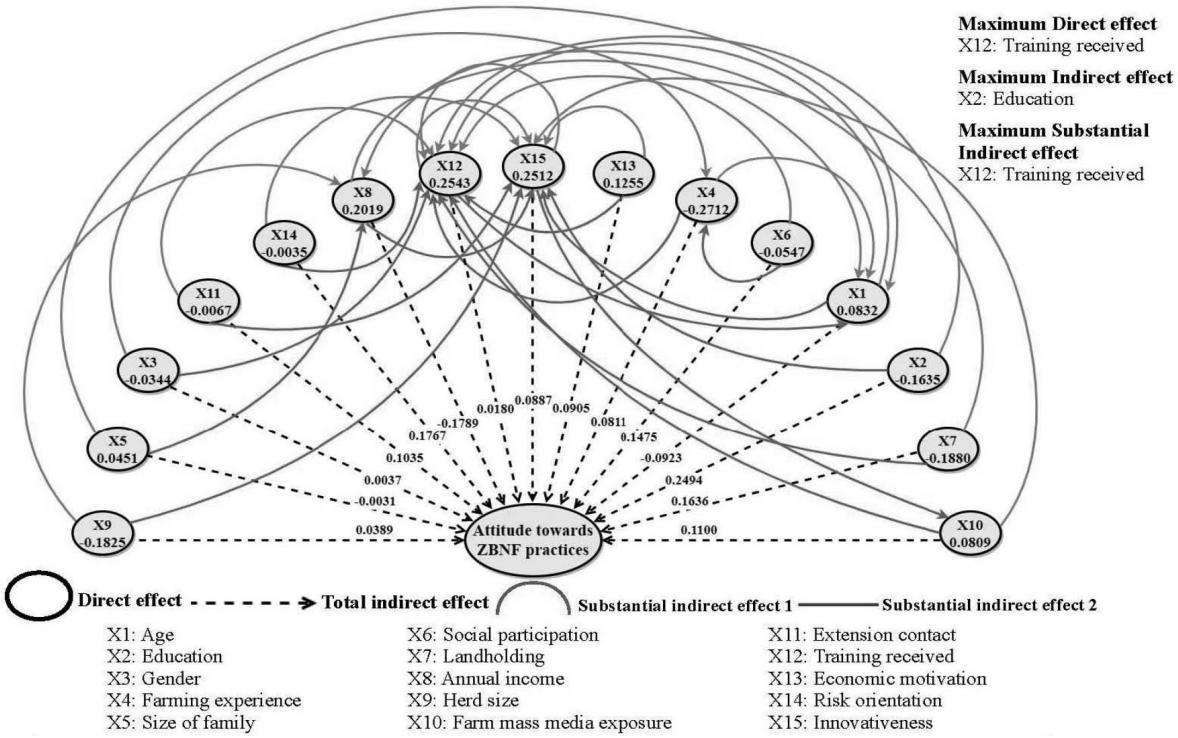

Fig. 1: Direct and Indirect effect of characteristics of the farmers on attitude towards ZBNF practices

The maximum positive indirect effect was exerted by education, risk orientation, size of landholding, social participation, farm mass media exposure, extension contact, economic motivation, innovativeness, farming experience, herd size, training received and gender on farmers' attitude towards ZBNF practices. The family size had a maximum negative indirect effect, followed by age and annual income, on farmers' attitude towards ZBNF practices. The maximum substantial indirect effect was channelled through training received through ten factors, and second largest substantial indirect effect was channelled through innovativeness in the case of nine factors.

CONCLUSION

The independent variables *viz*., innovativeness, training received, economic motivation and farm mass media exposure had a positive and significant relationship with farmers' attitude towards ZBNF practices. Farming experience had a significant but negative relationship with farmers attitude towards ZBNF practices. Thus, researchers may emphasise developing favourable attitudes towards ZBNF practices. In case of stepwise regression, out of fifteen independent variables, three variables had a significant relationship with farmers' attitude towards ZBNF practices. Together these three variables contribute around 18.70 per cent variation, as indicated by R^2 value for the farmers' attitude towards ZBNF practices. Major variables contributing to the maximum direct positive effect on farmers' attitude towards ZBNF practices were training received, innovativeness and annual income. The maximum positive indirect effect was exerted by education, risk orientation and size of landholding. The maximum substantial indirect effect was channelled through training received. The study indicates that variables like innovativeness, training received, economic motivation and farm mass media exposure play a key role in predicting the overall attitude of farmers' towards ZBNF practices and hence, these variables can be manipulated to formulate favourable attitude towards ZBNF practices among farmers through various capacity building programmes.

CONFLICT OF INTEREST

No conflict of interest among researchers.

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