A SCALE TO MEASURE ATTITUDE OF FARMERS TOWARDS
ZERO BUDGET NATURAL FARMING

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ABSTRACT

Attitude is defined as the degree of favourable or unfavourable feeling of the farmers towards zero budget natural farming. It is the accepted fact that an attitude of an individual plays an important role in determining ones behaviour. Keeping this in view a standardized scale has been developed to measure the attitude of farmers towards zero budget natural farming (ZBNF). A summated (likert) rating scale was been developed. The process started with identifying the dimension, collection of items followed by relevancy and item analysis and checking the reliability and validity for precision and consistency of the results. A total of thirty three (33) statements were framed in which finally twelve (12) statements were finally retained for measuring attitude of farmers towards zero budget natural farming. The scale contains total twelve statements, out of which eight statements are positive and four statements are negative. The scale developed was found highly reliable and valid.

Keywords: *attitude; scale; ZBNF; farmers; reliability*

INTRODUCTION

Zero budget natural farming is unique chemical free method which not require any credit or without purchasing input and eco-friendly system of farming. In recent year, concerns have been raised over the effect of the overuse of agricultural pesticide, fertilizer and other chemical on the environment and human health. Zero budget natural farming can be used as an alternative to the modern day chemical intensive farming. Use of this type of farming method can result in reduce synthetic chemical usage. This will obviously reduce the environmental and human health hazards problems. Therefore there is a need to analyses the situation and factors those responsible for not obtaining the desired rate of adoption pertaining to sustainable agriculture in general and ZBNF in particular. For the adoption of ZBNF, there must be an adequate knowledge about ZBNF coupled with positive attitude of farmers towards ZBNF. Change in knowledge and attitude preceded adoption of an innovation. Therefore there is a need to study the attitude of farmers towards zero budget natural farming, as attitude forms an essential component for better implementation and success of any innovative farming practice but non-availability of a proper scale to measure farmers' attitude towards zero budget natural farming. Hence, in order to study the attitude of farmers towards zero budget natural farming, a scale has been developed.

OBJECTIVE

To develop and standardize the scale to measure attitude of farmers towards zero budget natural farming

METHODOLOGY

Attitude refers to the "degree of positive or negative affect associated with some psychological object" (Thurstone, 1946). To measure the degree of positive or negative feelings of the farmers towards ZBNF, a scale was developed by adopting 'Scale product method' which combines the Turnstone's technique of equal appearing interval scale (1928) for selection of items and Likert's technique of summated rating (1932) for ascertaining the response on the scale as proposed by Eysenck and Crown (1949). The study was conducted in Ahmedabad district of Gujarat state. The methodology is also followed by Yeragorla *et al.* (2021) and Vinaya *et al.* (2018).

RESULTS AND DISCUSSION

The following procedure was adopted to develop and standardize the scale to measure the attitude of farmers towards zero budget natural farming (ZBNF).

Statement collection

In preliminary stage for developing the scale,

numbers statements reflecting feelings of the farmers towards ZBNF were collected from relevant literature, discussion with major guide and experts of ZBNF.

Editing of statements

The collected statements were screened and edited by following criteria laid down by Edwards (1957) and finally 33 statements were selected as they were found to be non-ambiguous and non-factual.

Statement analysis

In order to judge the degree of 'Strongly unfavourableness' to Strongly favourableness' of each statement on the five point equal appearing interval continuum, a panel of judges was selected. One hundred sheets of the selected statements were given to the experts working in Department of Extension Education and Directorate of Extension Education of various SAUs, Extension Education Institute, AAU, Anand, through Google form. The judges were requested to judge each statement in terms of their most agreement or most disagreement with the statements with the five equal appearing interval continuums. Fifty forms given to the experts were returned after duly recording their judgments and were considered for the analysis.

Determination of scale and quartile

The five points of the rating scale were assigned score ranking from 1 for most unfavourable and 5 for most favourable. The based on judgment, the median value of the distribution and the Quartile (Q) value for the statement concerned was calculated with the help of following formula.

$$S = L + \frac{0.50 - \sum Pb}{Pw} \times i$$

Where,

S = Scale value

L = The Lower limit of the interval in which the median falls

$\sum_{Pb}$ = The sum of the proportion below the interval in which the median falls

P_w = The proportion within the interval in which the median falls

i = The width of the interval and is assumed to be equal

to 1.0 (one).

Thurstone and Chave (Edwards, 1957) used the inter-quartile range Q as a means of the variation of the distribution of the judgments for a given statement. To determine value of Q, two other point were measured, the 75th centile and 25th centile.

The 25th centile was obtained by the formula.

$$C_{25} = L + \frac{0.25 - \sum Pb}{Pw} \times i$$

Where,

C_{25} = The median or scale value of the statement

L = The Lower limit of the interval in which the 25th centile falls

$\sum_{Pb}$ = The sum of the proportion below the interval in which the 25th centile falls

P_w = The proportion within the interval in which the 25th centile falls

i = The width of the interval and is assumed to be equal to 1.0 (one).

The 75th centile was obtained by the following formula.

$$C_{75} = L + \frac{0.75 - \sum Pb}{Pw} \times i$$

Where,

C_{75} = The median or scale value of the statement

L = The Lower limit of the interval in which the 75th centile falls

$\sum_{Pb}$ = The sum of the proportion below the interval in which the 75th centile falls

Pw = The proportion within the interval in which the 75th centile falls

i = The width of the interval and is assumed to be equal to 1.0 (one).

Then the interquartile range would be given by taking the difference between C_{75} and C_{25}, thus,

$$Q = C_{75} - C_{25}$$

Table 1: Discrimination of items on the bases of S and Q values

Statement Number	Statements	S Value	Q Value	Selected/ Not selected
01	I consider that ZBNF is most effective way for natural resource management	1.30	1.14	Not selected
02	Use of ZBNF practices is best option to produce chemical residue free food	1.36	1.10	selected
03	I believe that ZBNF is most effective to avoid human health hazards effect of modern farming	1.50	1.19	selected
04	I prefer ZBNF due to their eco-friendly or environmental friendly character	1.64	1.02	selected
05	I believe ZBNF is best solution to mitigate climate change	1.65	1.04	Not selected
06	I want quick result to my crop so I will not prefer ZBNF	1.71	1.14	selected
07	In my field, soil was deteriorated due to continuous use of chemicals so I will go for ZBNF	1.79	1.44	Not selected
08	I think it is difficult to feed the growing population by adoption of ZBNF	1.80	1.99	Not selected
09	I believe that ZBNF is best alternative farming system in present scenario.	1.88	1.24	Selected
10	I think that ZBNF is idea for 'back to basics' of farming	1.97	1.33	Not Selected
11	I feel that ZBNF is most profitable venture	2.05	1.54	Not selected
12	There is more propaganda about the ZBNF but in practice it is not so	2.05	2.15	Not selected
13	I advocate ZBNF to my son as it low cost farming	2.10	1.49	Not selected
14	I feel that production through ZBNF will fetch more prices	2.10	1.29	selected
15	It is better to give more importance to integrated approach rather than ZBNF	2.10	1.49	Not selected
16	In my opinion ZBNF is nothing but it is traditional farming of our forefather doing	2.1	2.27	Not selected
17	I feel that ZBNF can be easily adopted by functionally literate farmers	2.12	1.48	Not selected
18	I think that food security problem will be worsen if all the farmers follow ZBNF	2.13	1.72	Not selected
19	I think reliance on ZBNF will be helpful in doubling farmer's income	2.16	1.42	Not selected
20	I will not advocate ZBNF as it has no scientific validation yet	2.18	1.86	Not selected
21	I feel that practices of ZBNF are more tedious	2.18	1.32	selected
22	I will adopt ZBNF because I believe that welfare of community is more important than profits	2.23	1.68	Not selected
23	I believe that ZBNF is necessary evil in present context	2.26	1.59	Not selected
24	I think old days are better so, I will go for ZBNF	2.28	1.52	Not selected
25	I think that the adoption of ZBNF is dragging farmers to old era	2.33	1.92	Not selected
26	ZBNF practices have little bit edge over conventional practices	2.34	1.49	selected
27	I feel that ZBNF is not effective in all agriculture ecological situations	2.40	2.22	Not selected
28	Adoption of ZBNF is blunder as market for ZBNF produce does not exist yet	2.50	2.09	selected
29	I think ZBNF is myth	2.59	2.20	Not selected
30	I believe that reliance on ZBNF will end debt cycle of farmers	2.67	1.59	selected
31	I will adopt ZBNF as I believe that the killing of living organisms is some sort of sin	2.83	2.11	selected
32	I feel that ZBNF means wastage of time and money	2.83	2.34	Not selected
33	I feel that adoption of ZBNF is gambling	2.96	2.18	selected

Final statements for attitude scale

In this manner, the interquartile range (Q) for each statement was worked out for determinations of ambiguity involved in the statements. Only those statements were selected whose median values were greater than Q value. Thurstone and Chave (Edwards, 1957) described another criteria in addition to Q as a basis for rejecting statement in scale constructed by the method of the equal appearing interval. However, when a few statements had the more or less similar scale values, statements having lowest Q value were selected and also with 0.10 difference on S value and make group on the basis of them, from this group only those statements were selected whose Q values lower than other. Based on the scale (median) and Q values 12 statements numbering 2, 5, 10, 11, 12, 18, 19, 20, 22, 28, 29, and 33 of the original list were finally selected to constitute attitude scale. The selected 12 statements for final format of the attitude scale were randomly arranged to avoid response bias. The final format of the scale is presented in Table 2.

Table 2: Final scale to measure the attitude of farmers towards zero budget natural farming

Sr. No.	Statement	SA	A	UD	DA	SDA
1	I believe that ZBNF is best alternative farming system in present scenario. (+)					
2	I feel that adoption of ZBNF is gambling. (-)					
3	I believe that reliance on ZBNF will end debt cycle of farmers. (+)					
4	I feel that practices of ZBNF are more tedious. (-)					
5	Use of ZBNF practices is best option to produce chemical residue free food. (+)					
6	I want quick result to my crop so I will not prefer ZBNF. (-)					
7	I feel that production through ZBNF will fetch more prices. (+)					
8	Adoption of ZBNF is blunder as market for ZBNF produce does not exist yet. (-)					
9	ZBNF practices have little bit edge over conventional practices. (+)					
10	I prefer ZBNF due to their eco-friendly or environmental friendly character. (+)					
11	I will adopt ZBNF as I believe that the killing of living organisms is some sort of sin. (+)					
12	I believe that ZBNF is most effective to avoid human health hazards effect of modern farming. (+)					

*SA = Strongly Agree, A = Agree, UD = Undecided, DA = Disagree, SDA = Strongly Disagree

Reliability of scale

The split-half technique was used to measure the reliability of the scale. The 12 statements were divided into two equal halves with 6 odd numbered and 6 even numbered statements in other. These were administered to 20 respondents who were not selected for the study. Each of the two sets was treated as separate scales having obtained two score, for each of the 20 respondents. Co-efficient of reliability between the two sets of score was calculated by Rulon's formula (Guilford, 1954) which came to 0.72.

Thus the correction factor is calculated by using Spearman Brown formula

Where,

rtt = Coefficient of the reliability of the original test

roe = reliability of coefficients of odd and even score

The coefficient of reliability was calculated by the Spearman Brown formula which came to be 0.83. Thus, the scale developed was found highly reliable.

Content validity of the scale

The validity of the scale examined for content validity by determining how well content was selected by discussing it with 20 specialists of extension and academicians of Anand agricultural university. Thus, the present scale was also satisfied the content validity.

Administering the scale

The final attitude scale was administered on the selected sample farmers. The responses were collected in five point continuum viz. strongly agree, agree, undecided, disagree and strongly disagree with weight age of 5, 4, 3, 2 and 1, respectively for positive statements and reverse scoring for negative statements. The total attitude score for each respondent was obtained by adding all the scores of their responses of all the statements and categories on arbitrary basis.

CONCLUSION

The attitude scale developed was found to be reliable and valid. The attitude scale developed was

administered on 20 farmers of a non-sample area, there were no complications in using the scale, hence it can be concluded that the scale developed was useful in measuring the attitude towards ZBNF.

Hence, researcher can use this scale in future for measuring the attitude of farmers in similar studies.

CONFLICT OF INTEREST

No conflict of interest among researchers.

REFERENCES

Edward A. L. (1957) Techniques of attitude scale construction, Appleton Century Crofts, Inc., New York

Eysenck, H. J. and Crown, S. (1949). An experimental study in opinion-attitude methodology. *Int. J. Opin. Attitude Res.,* 3: 47-86.

Guilford, J. P. (1954). Psychometric methods. Tata McGraw-Hill Publication Co. Ltd., Bombay : 378-382.

Likert, R. A. (1932). A technique for measurement of attitude. Archives of Psychology, New York. 140.

Thurstone, L. L. & Chave, E. G. (1928). The measurement of opinion. *J. of Abnorm. Psychol.*, 22: 415-430.

Thurstone, L. L. (1946). The Measurement of attitude. American Journal of Sociology, Chicago University Press, 39-50.

Vinaya Kumar H. M., Patel J. B. and Chauhan, N. B. (2018). Attitude of farmers towards Agricultural Produce Market Committee. *Guj. J. Ext. Edu.,* 29(2): 224-226.

Yeragorla, Venkata Harikrishna, Patel, J. B. and Vinaya Kumar, H. M. (2021) Development of a scale to measure the attitude of extension personnel towards e-extension. *Guj. J. Ext. Edu.* 32(1): 34-37.