

RESEARCH NOTE

A Scale Measure the Attitude of Farmers towards Zero Tillage Technology

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ABSTRACT

Attitude plays a pivotal role in influencing one's behavior with respect to a particular psychological object. As corollary of this fact, the farmer's attitude towards zero tillage technology largely determines the nature and extent of acceptance of scientific farm technology in modernizing agriculture. Thus, attitude of farmers forms essential components for better implementation and success of improved farm technology. It is therefore crucial to identify the attitude of farmers towards zero tillage to take up such step which are required to make ZTT a success. Keeping this in view the present study was designed to construct a standardized scale to measure the attitude of farmers towards zero tillage technology.

Key words: Attitude; Zero tillage; Behavior; Standardized scale;

Attitude is an important component of human behavior and plays a pivotal role in influencing one's behavior with respect to a particular psychological object. As corollary of this fact, the farmer's attitude towards zero tillage technology largely determines the nature and extent of acceptance of scientific farm technology in modernizing agriculture. Thus, attitude of farmers forms essential components for better implementation and success of improved farm technology. It is therefore crucial to identify the attitude of farmers towards zero tillage to take up such step which are required to make ZTT a success. Keeping this in view the present study was designed to construct a standardized scale to measure the attitude of farmers towards zero tillage technology.

METHODOLOGY

The details of the steps followed in the construction and standardization of scale to measure attitude of farmers towards zero tillage technology by following the *Likert (1932)* method of submitted rating is presented below:

Collection of Statements: A large number of statements were collected from review of literature, discussion with

extension experts, agriculture scientists and farmer, care was taken to include approximately equal number of positive and negative statements. Those statements were carefully edited in the light of fourteen criteria suggested by *Edwards (1969)* and statements were revised to avoid ambiguity and duplication. Thus 21 statements were selected for further analysis.

Relevancy analysis: The selected two sets of statements were mailed with appropriate instructions to 60 judges, experts in the field of zero tillage technology for their judgement on each items relevancy on three point continuum, viz very relevant, relevant, and not relevant. The judges were also required to make necessary modification and addition or deletion of statements, if they so desire. The judges considered for this purpose were the ICAR scientists, ADO, and the person having considerable practical experience about zero tillage technology. The response was received from 50 judges in time.

Selection of items: The response of judges was tabulated and analyzed to work out "Relevancy percentage", Relevancy weightage" and "mean relevancy score" for all the statements.

Relevancy percentage (RP): It was worked out by summing up the scores of “very relevant” and “relevant” categories which was converted into percentage.

$$RP = \frac{\text{Very relevant response} \times 2 + \text{relevant} \times 1}{\text{Maximum possible score}(50 \times 2 = 100)} \times 100$$

The calculated value of RP was found in the range of 62.5 (minimum) to 100 (Maximum) percentages.

Relevancy weightage (RW): It is the rate of actual score obtained to the maximum possible obtainable score by each respondent.

$$RW = \frac{\text{Very relevant score} \times 2 + \text{relevant score} \times 1}{\text{Maximum possible score}}$$

Mean relevancy Score: It was obtained by the standard formula.

$$MRS = \frac{\text{Very relevant score} \times 2 + \text{relevant score} \times 1}{\text{Number of judges responded (50)}}$$

The calculated value of MRS was found in the range of 1.14 minimum to 2.65 maximum.

Final inclusion of statements: The variable with their relevancy percentage, relevancy weightage and mean relevancy scores were tabulated in the table from this

the statements having relevancy percentage of more than 75, relevancy weightage of more than .75 and mean relevancy score of more than 2 was considered for the final selection of statements. By this process 15 statements were selected in the first stage.

Item analysis: A questionnaire was prepared consisting of 15 statements and was used to collect responses from 50 farmers by personal interview. The respondents were asked to indicate their degree of agreement on a three point continuum namely. Agree undecided and disagree with scores of 3, 2 & 1 for each positive statement and 1, 2, 3 for each negative statement respectively. The attitude score of a respondent was obtained by summing the score of all items, thus total score obtained by each respondent was calculated. The respondents were arranged in the descending order. For the purpose of item analysis 25 per cent of the respondents with highest total score and 25 per cent of respondents with lowest score were selected, these two groups in terms with analysis was conducted. The calculated t value was found to be distributed between 0.95 to 13.00. Later the statements with t value of 2.10 and above were considered for final inclusion these 10 statements quantified in the final scale.

Table 1. The items generated with relevancy percentage, relevancy weightage and mean relevancy score based on judge’s relevancy ratings

Statement	RP	RW	MRS
ZT technology gives consistent and good yield at par with conventional.	90.00	0.733	2.20
Broad leaf weeds problem is more in ZT technology.	87.50	0.825	2.48
Adoption of ZT reduces cost of cultivation.	100.00	0.917	2.75
All type of farmers can adopt ZT technology.	72.50	0.675	2.03
ZT technology reduces soil productivity.	87.50	0.800	2.40
ZT technology does not advances sowing time.	92.50	0.867	2.60
ZT technology helps to get higher income.	77.50	0.717	2.15
Insect problem is more in ZT technology.	87.50	0.800	2.40
Requirement of chemical fertilizer is more in ZT technology.	85.00	0.792	2.38
Requirement of water is not less in ZT technology.	90.00	0.792	2.38
Herbicide usage in ZT is more for weed control.	70.00	0.683	2.05
Adoption of ZT helps to improve soil health.	65.00	0.683	2.05
Adoption of ZT spoils the soil structure.	90.00	0.800	2.40
Soil compactness increases in ZT technology.	82.50	0.775	2.33
Loose straw is a problem in ZT technology.	75.00	0.692	2.08
ZT technology requires extra seed and fertilizer.	85.00	0.858	2.58
Pink borer is a problem in ZT fields.	82.50	0.742	2.23
ZT does not help in reducing environment pollution.	85.00	0.817	2.45
Phlaris minor is less in ZT fields.	85.00	0.800	2.40
ZT technology requires less labour.	100.00	0.875	2.63
Machinery maintenance is reduced due to ZT adoption.	92.50	0.833	2.50

Table 2. Attitude of the respondents about zero tillage technology

Statements	Mean Score	
	Adopters	Non-adopters
ZT technology gives consistent and good yield at par with conventional.	2.48	2.13
Broad leaf weeds problem is not more in ZT tech.	2.30	2.01
Adoption of ZT reduces cost of cultivation.	2.38	2.23
All type of farmers can not adopt ZT technology.	2.18	2.08
ZT technology does not advance sowing time.	2.05	1.04
ZT technology helps to get higher income.	2.41	1.91
Insect problem is more in ZT technology.	2.58	1.39
Requirement of water is not less in ZT technology.	2.74	1.74
Adoption of ZT helps to improve soil health.	2.63	1.91
ZT does not help in reducing environment pollution.	2.01	1.81

Reliability of the Scale: The split half method was used for assessing internal consistency of the scale developed. The scales were split into two halves on the basis of odd and even numbers of statements and administered to 40 selected numbers of respondents. Thus, two sets of scores were obtained. The half test reliability coefficient was calculated by using Pearson product moment correlation coefficient. It was found to be 0.61 which was significant with t value 0.57. The reliability coefficient thus obtained indicated high internal consistency of attitude scale constructed for the study.

Validity: Content validity is the representativeness or sampling adequacy of the content- substance, the matter and the topics of a measuring instrument. All the edited statements were given to 40 judges for their expert guidance in developing the scale. The suggestions of the experts were incorporated in the scale. Hence the present scale satisfied the content validity. Finally, 10 items were selected to determine attitude of farmers toward zero tillage technology and arranged in such a

way that positive and negative statements appear alternatively to avoid biased responses.

RESULTS AND DISCUSSION

The responses of respondents on the questions related to attitude are summarized in Table 2. Adopters were highly satisfied with zero tillage technology as it gave more production, reduction in irrigation and cultivation cost, sense of promotion, technical feasibility, maintaining soil health, involvement of less labor and reduction in *Phalaris minor* population.

It is evident from the results that the advantages of zero till technology in terms of production, cost saving and profitability were recognized by all the respondents. Majority of the respondents from both the categories emphasized that this technology should be implemented at large scale to bring sustainability in agriculture. Adopters were more convinced about consistent and good yield in zero tillage. The study was in line with the finding of *Singh et al (2007)*. *Malik (2005)* also reported that attitude of farmers had been driving force of change from traditional method to zero tillage technology. *Kumar et al (2005)* found that majority of the respondents strongly agreed that zero adoption was mainly due to early sowing, lesser operational cost, less weed infestation and higher yields.

CONCLUSION

This scale can be used by the researchers, extension persons and social societies involved in the resource conservation technologies for measuring the attitude of farmers about zero tillage technology.

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