

SCALE DEVELOPMENT FOR MEASURING THE ATTITUDE OF COTTON GROWERS TOWARDS DRIP IRRIGATION SYSTEM

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ABSTRACT

Due to non-availability of a proper scale to measure cotton growers' attitude towards Drip Irrigation System, it was thought necessary to construct a scale for the purpose. Keeping this in view, an attempt has been made to develop a scale for measuring the attitude of cotton growers' towards DIS. Technique chosen to develop attitude scale was 'Scale Product Method' which combines the Thurston's technique of equal appearing interval scale for selection of the items and likert's techniques of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949).

Keywords : attitude, drip irrigation system, continuum, reliability, validity

INTRODUCTION

Attitude has been defined as "the degree of positive or negative feeling, affect, opinion, action and belief associated with some psychological object". The cognitive component of an attitude consists of the beliefs, which involves attributes like favourable or unfavourable, desirable or undesirable, good or bad etc. The feeling component refers to the emotions which give attitude a motivating character or action tendencies. The action tendency component of an attitude includes all behavioural readiness associated with it. These three components of attitude are however, consistently related to each other. The psychological object for the present study has been conceptualized as the Drip Irrigation System.

METHODOLOGY

In this study, an attempt has been made to develop a scale, which can scientifically measure attitude of the cotton growers' towards drip irrigation system. Among the techniques available for the development of scale, the Thurston's equal appearing interval scale (1928) and the Likert's summated rating scale (1932) are quite well known. However, both the methods suffer from the limitations, the first one in getting discriminating response and second one in selection of items. Thus, technique chosen to develop attitude scale was 'Scale Product Method' which combines

the Thurston's technique of equal appearing interval scale for selection of the items and likert's techniques of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949).

Item collection

The items making up an attitude scale are known as statements. The statements were collected from the relevant literature as well as construct through discussion with experts, major guide and extension personnel.

Editing of Items

The statements, thus selected were edited on the basis of the criteria suggested by Edward (1957). At last, 49 statements were selected as they were found to be non ambiguous.

Statements analysis

Fifty slips of these statements were distributed among 50 selected experts working in Department of Extension Education and Directorate of Extension Education of four agricultural universities of the Gujarat as well as Extension Education Institute, Agronomy, Agricultural Economics and Agricultural Statistic department of Junagadh Agricultural University to judge the degree of unfavourableness to

favourableness of each statement for its inclusion in the final scale on the five points equal appearing interval continuum and their judgements 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. Based on judgment, the median value of the distribution for the statement concerned was calculated with the help of following formula.

$$S = L + \frac{0.50 - \sum P_b}{P_w} \times i$$

Where,

S = The median or Scale value of the statement

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

$\sum P_b$ = 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, which was assumed as equal to 1.0 (one)

The inter-quartile range (Q = Q3 - Q1) for each statement was also worked out for determination of ambiguity involved in the statement.

To determine value of Q at 75th centile and 25th centile, the following formulas were used.

The 75th Centile was obtained by the following formula.

$$C_{75} = L + \frac{0.75 - \sum P_b}{P_w} \times i$$

$$C_{25} = L + \frac{0.25 - \sum P_b}{P_w} \times i$$

Where,

C_{75} = The 75th centile value of the statement

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

$\sum P_b$ = The sum of the proportion below the interval in which

the 75th Centile falls

P_w = 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)

The 25th centile was obtained by following formula.

$$C_{25} = L + \frac{0.25 - \sum P_b}{P_w} \times i$$

Where,

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

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

P_b = 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).

Then the Interquartile range worked out by taking the difference between C_{75} (Q3) and C_{25} (Q1), thus,

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

RESULTS AND DISCUSSION

In this manner the inter-quartile range (Q) for each statement was worked out. Only those statements were selected whose median values were greater than Q value. Thurstone and Chave (1928), Edwards (1957) described criteria in addition to Q as a basis for rejecting statement in scales constructed by the method of the equal appearing interval (Thorat *et al.*, 2016). Accordingly, when a few items had the same scale values, the items having lowest Q values were selected. Based on the scale (median) and Q values 24 statements were finally selected to constitute attitude scale. The selected 24 statements for final format of the attitude scale were randomly arranged to avoid response biases. The final format of the scale is presented in Table 1.

Table 1: Final scale to measure the attitude of cotton growers towards drip irrigation system

No.	Statements	Response categories				
		SA	A	UD	DA	SDA
1	Drip Irrigation System (DIS) is well thought practical approach for the development of farmers.					
2	DIS means sense of economic use of water.					
3	DIS is a mean for proper distribution of water.					
4	Enough cooperation or information is not provided by the office bearers of the GGRC, for availing the benefits of DIS.					
5	Only few farmers are benefited by the GGRC for DIS.					
6	Only small and marginal farmers get extra benefits of subsidy for DIS.					
7	DIS required high initial investment.					
8	DIS increases the agricultural production.					
9	DIS helps to give irrigation as and when required.					
10	DIS helps to protect crop at the time of scarcity condition.					
11	Getting subsidy for DIS is a tedious process.					
12	Irrigation intensity is increased through DIS.					
13	Due to DIS knowledge regarding modern agricultural technology is increased.					
14	DIS is helpful to use irrigation water judiciously.					
15	DIS helps to introduce new crops.					
16	Irrigation problems of the farmers can be solved only through DIS.					
17	There is no change in cropping pattern due to DIS.					
18	There is big expense in maintenance and repairing of DIS.					
19	More than one crop in a year could be possible due to DIS.					
20	Dripper blockage due to salt, it is a serious problem of DIS users.					
21	Fertilizers applications to crop become very easy for farmers due to DIS.					
22	DIS save the time of farmers as compared to traditional irrigation systems.					
23	Subsidy given by GGRC is not sufficient to establish of DIS for farmers.					
24	GGRC and Irrigation Department provide information about good suppliers of DIS to farmers.					

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

Reliability of the scale

A scale is reliable if it consistently produces the similar results when applied to the same sample. In the present study, split-half method of testing reliability was used because of limited time and resources available to the researcher.

The 24 statements were divided into two halves with 12 odd numbered in one half and 12 even-numbered statements in the other. These were administered to 20 respondents. Each of the two sets of statements was treated as a separate scale and then these two sub-scales were correlated. The co-efficient of reliability was calculated by the Rulon’s formula (Guilford, 1954), which came to 0.7523. Thus, the scale developed was found highly reliable.

Content Validity of scale

The validity of the scale was examined for content validity by determining how well the content of the scale

represented the domain subject matter under study. Since as many items covering the area as possible were selected by discussion with experts, reviewing the literature and adherence to the judges’ ratings, it was presumed that the instrument 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 scale developed to measure attitude of cotton

growers towards drip irrigation system is reliable and valid. Hence the same can be used by other investigators elsewhere in the context of State Agricultural University or for other organizations with due modifications.

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