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Research Article

To develop a standardized scale for measuring the attitude of beneficiary farmers towards drip irrigation technology

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SUMMARY : Due to the non-availability of a proper scale for measuring the attitude of beneficiary farmers towards drip irrigation technology in Chomu and Phulera tehsil of Jaipur district, Rajasthan. It was thought necessary to construct a attitude sale for measuring the attitude of beneficiary farmers toward drip irrigation technology. Keeping this in view, an attempt has been made to develop a scale for measuring the attitude of beneficiary farmers towards drip irrigation technology. Method of equal-appearing intervals, Likert's technique was used for measuring the attitude of beneficiary farmers toward drip irrigation technology. Thirty eight statements were selected from 53 statement's for which scale (s) and 't' value were worked out. The scale values of the statements on the psychological continuum were relatively equally spaced.

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KEY WORDS:
Beneficiary farmers, Attitude scale, Psychological continuum

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BACKGROUND AND OBJECTIVES

The attitude in the present study as defined by Thurstone (1946) is "the degree of positive or negative effect associated with some psychological object". By psychological object means the feeling about drip irrigation technology which people could differ with respect to positive or negative effect. Among the techniques available for construction of attitude scale, the Likert's technique of summated rating scale is quite well known. The scale was developed on the basis of Likert's technique of summated rating scale. The Likert's technique was used for constructing the attitude scale to measure the attitude of beneficiary farmers towards drip irrigation technology.

RESOURCES AND METHODS

The present paper presents data gathered in a proportionately sample of the beneficiary farmers towards drip irrigation technology in Chomu and Phulera tehsils of Jaipur district of Rajasthan. The 80 beneficiary farmers were selected for the study.

The details of the steps followed in the construction of Likerts (1932) type scale for measuring the attitude of beneficiary farmers towards drip irrigation technology have been discussed as below :

Item collection:

As the first step in developing attitude scale, a large number of statements related to drip irrigation technology were gathered from literature, books, bulletins, articles, journals and by holding discussions with the subject matter experts as well as with the office bearers related to drip irrigation technology and their personal experience.

A tentative list of the items was drafted keeping in view the applicability or item suited to the area of the study. The statements were screened in the light of criteria as suggested by Thurstone (1946) and Wang (1932).

These statements were framed in such a way that they could express the positive or negative attitude. In order to get five point judgement, five alternative response categories ranging from "strongly agree" (SA) to "strongly disagree" (SDA) were assigned to each statement. The statements collected regarding drip irrigation technology were discussed with subject matter

Table A : Statement-wise attitude of beneficiary farmers towards drip irrigation technology (n =80)

Sr. No.	Attitudinal statements	't' value (critical ratio)	Number of beneficiary farmers					Percentage level of agreement
			SA	A	UD	DA	SDA	
1.	Drip irrigation technology increases about 70% extra area under irrigation (+)	2.08	11	61	8	0	0	80.00
2.	Drip irrigation technology creates difficulty in intercultural practices (-)	1.88	0	6	18	43	13	75.75
3.	Drip irrigation technology maximize the utilization of available water (+)	2.22	25	52	3	0	0	85.50
4.	During high wind velocity equal distribution of water is impossible (-)	3.05	1	2	5	44	28	84.00
5.	Drip irrigation technology saves the crop from frost (+)	3.09	12	62	6	0	0	81.50
6.	There is inadequate root development through drip irrigation technology (-)	2.58	0	2	15	38	25	81.50
7.	Labour cost is required less when crop is irrigated by drip irrigation technology (+)	2.03	8	56	7	9	0	75.75
8.	Spare parts of drip irrigation technology are not easily available in market (-)	2.32	6	12	14	28	20	71.00
9.	Initial investment for installment of drip irrigation technology is not bearable by farmers (-)	2.35	0	0	7	42	33	88.50
10.	One can measure water easily with drip system than other methods (+)	1.85	47	20	13	0	0	88.50
11.	Land leveling is essential if drip irrigation technology used (-)	1.75	0	0	15	20	45	87.50
12.	Uniform water distribution through drip irrigation technology (+)	1.95	10	41	15	10	4	65.75
13.	There may not be significant increase in yield through drip irrigation technology (-)	2.07	3	4	10	9	54	86.75
14.	Subsidy is misutilized in the drip irrigation technology through governments agencies (-)	3.15	2	11	13	30	24	75.50
15.	The drip irrigation technology is the best method in water scarcity condition (+)	1.96	62	12	6	0	0	94.00
16.	Physical condition and structure of soil are distributed by continuous use of drip technology of irrigation (-)	4.17	8	35	19	11	7	53.50
17.	Drip irrigation technology is beneficial for saving water (+)	3.24	36	43	3	0	0	88.75
18.	Vegetable and fruit production is increased through drip irrigation technology (+)	3.86	19	40	14	7	0	77.75
19.	Water management is difficult through drip irrigation technology (-)	3.02	2	4	6	39	29	82.25
20.	Handling of drip set is very complex procedure (-)	3.28	7	56	8	6	0	45.50
21.	Drip irrigation technology reduces soil erosion (+)	2.75	11	24	31	8	6	66.50
22.	Soil moisture is maintained through drip irrigation technology around the plants root zone (+)	1.82	15	25	17	13	10	65.50
23.	Cropping intensity can be increased through drip irrigation technology (+)	1.76	14	20	13	24	9	61.50
24.	Credit and subsidy facilities are adequate for drip irrigation technology (+)	2.53	24	32	14	8	2	77.00
25.	Plant growth and plant yield decrease through drip irrigation technology (-)	2.86	9	26	11	22	12	60.50
26.	Water application rate is high through drip irrigation technology (-)	3.69	3	50	12	4	5	51.50
27.	Water management is easier by using drip irrigation technology than surface irrigation (+)	2.75	20	8	23	19	10	62.25
28.	Drip irrigation technology is most suitable for arid region (+)	2.17	7	35	10	21	9	63.50
29.	Fertilizer and chemicals cannot be applied easily though drip irrigation technology (-)	2.93	0	16	20	30	14	70.50
30.	Drip irrigation is beneficial only where ground water is available in sufficient quantity (-)	3.65	6	15	21	26	12	65.75
31.	Drip irrigation technology increases the cost of cultivation of crop (-)	1.96	4	11	5	59	1	70.50
32.	Surface runoff of irrigation water can be eliminated by drip system of irrigation (+)	2.92	10	27	21	12	4	69.75
33.	In drip system of irrigation, quantity of water can be controlled according to crop need (+)	1.75	21	26	19	8	6	72.00
34.	Water application efficiency is achieved by drip irrigation technology (+)	1.85	18	32	18	7	5	72.75
35.	Drip irrigation technology decrease the fertilizer use efficiency (-)	2.86	7	8	15	40	10	69.50
36.	By the use of drip irrigation technology nutrient can be preserve into the root zone of crop (+)	2.23	8	25	32	15	0	66.50
37.	Though drip irrigation technology salt is accumulated near plant root zone (-)	2.32	0	23	11	53	19	66.50
38.	Through drip irrigation technology water application time is normally long (-)	2.25	0	10	15	40	15	75.00

SA = Strongly agree A = Agree UD = Undecided DA = Disagree SDA = Strongly disagree

specialists. They were requested to add or delete any statement which they deemed fit for the conclusion or deletion. They were also asked to check the statements for being favourable or unfavourable attitude towards drip irrigation technology. Again the statements were rewritten in the light of the criticism and comments of the experts. In this way, finally a total of 38 was retained. Efforts were made to select more or less equal number of positive and negative statements and than these statements were administered for the selected farmers under study and their responses were worked out. The mean score was calculated and based on the mean score of individual items, rank was assigned finally, arranged the statements according to the ranks and need hierarchy.

Item selection:

Item selection is an important step in constructing valid and reliable scale (Edward, 1957). To do so, 53 items were administered for a random sample of 30 farmers who were more a less identical to the main sample but those farmers were not included in the main sample. Their reactions to each item were marked on the five point continuum ranging from "strongly agree" to "strongly disagree" and the numerical values from five to one were assigned to the five categories of responses for the positive items. The scoring system was reversed for the negative items. The score of an individual respondent on the scale was computed by summing up the weight age of individual items. The frequency distribution of scores based upon the responses concerning all the statement was obtained. According to Edwards (1957) 25 per cent of the highest total score and 25 per cent of the subject with the lowest total score were taken assuming that these two groups (high and low) would provide the criterion group in items of evaluating the individuals statements. For evaluating the responses the high and low groups of the individuals statements, the critical ratio value was worked out by using the formula and the procedure was used given by Edwards (1957). All the positive and negative items were than subjected to statistical analysis and their critical ratio value was worked out (Table A). The 't' value of items (38 statements) out of 53 statements was found to be significant (more than 1. 75) at 5 per cent level of significance. The advantage of having both kinds of statements represented in the final scale was that there could the minimization of possible response sets of the subject with might be generated if only favourable and unfavourable statements were included in the scale.

Reliability of the scale:

According to Kerlinger (1973) "Reliability is the accuracy or precision of measurement". A scale may be said to be reliable when it gives the same measurement under the similar conditions. Reliability is defined through error, "Reliability is the proportion of true variance to the total obtained variance of the data yielded by a measuring instrument". To know the reliability of attitude scale construction was determined by using 'split halves method'. The item of the scale were divided into two halves by pooling the odd numbered items for one scale and even numbered items for the other scale. Each scale was administered for a group of 30 farmers and the agreement between the two sets of scores on each scale – one and odd numbered and the other an even numbered items, was determined by correlation- coefficient between them, which was found to be highly significant (r= 0.793). The reliability coefficient thus obtained, indicated that internal consistency of the attitude scale construction for the study was quite high.

Validity of the scale:

Since the contents of attitude scale were derived from the list of statements based on the opinion of the experts, it was assumed that the score obtained by administering the attitude scale of this study would measure what was intended to be measured. Further 38 statements were finally selected by which their 't' value, was significant. It was assumed that the scale developed was valid for measuring the attitude of beneficiary farmers towards drip irrigation technology and hence it was administered for its final use.

OBSERVATIONS AND ANALYSIS

Data presented in Table 1 reveal that majority of the beneficiary farmers 56.25 per cent had favourable attitude towards drip irrigation technology followed by 25.00 per cent who expressed most favourable attitude of the beneficiary farmers towards drip irrigation technology.

However, only 18.75 per cent beneficiary farmers expressed least favourable attitude towards drip irrigation technology. The findings of the present study are in agreement with the findings of Singh and Dangi (2010), who revealed that the majority of the respondents (62.25 %) had favourable

Table 1 : Attitude level of beneficiary farmers towards drip irrigation technology **(n = 80)**

Sr. No.	Attitude level	Frequency	Percentage
1.	Least favourable (score below 130.23)	15	18.75
2.	Favourable (score from 130.23 to 142.53)	45	56.25
3.	Most favourable (score above 142.53)	20	25.00
	Total	80	100.00

$\overline{X}$ = 136.38 σ = 6.15

attitude, followed by (17.99 %) respondents having most favourable and only 18.33 per cent had least favourable attitude towards drip irrigation technology.

Conclusion:

Majority of the beneficiary farmers had favourable attitude towards drip irrigation technology. Regarding aspect wise attitude most favourable attitude was found relating to 'the drip irrigation technology is the best method in water scarcity condition' on the other hand, the least favourable attitude was found with regarded to 'handling of drip set is very complex procedure'.

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