RESEARCH NOTE

Standardized Scale to Measure Attitude of Beneficiary Farmers towards Drip Irrigation Technology

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ABSTRACT

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.

***Keyword** : Beneficiary farmers; Attitude scale;*

It is relatively a new concept, which has developed over the last decade throughout the world. In 1964, Symcha Blass an Israeli engineer developed the first potential drip irrigation system / technology. Today, India ranks 7th in terms of coverage of area under drip irrigation with an irrigated area of 3,09,466.4 hectares after USA, Spain, Australia, South Africa, Israel and Italy. In this method water is supplied directly near the root zone of plants, through drop by drop, with the help of drippers. Drippers are linked with side pipelets which are linked with main pipeline connected with water supplying source .Drip irrigation system / technology is very profitable as it saves 60-70% water as compared to surface irrigation method and reduces labour cost, protects the plants from diseases by minimizing humidity in atmosphere. Soluble fertilizers can also be applied with drip irrigation water. Thus, drip irrigation has become a means of hi-tech agriculture / Horticulture and precision farming. This technology is, especially, suitable for saline and alkaline soil and water use efficiency (*Yojana, July, 2010*).

The drip irrigation technology is, especially, suitable for saline and alkaline soil and, water use efficiency under Drip Irrigation System/ Technology is 80 to 90 per cent. By drip system of irrigation, 95 per cent of the irrigation water can be used efficiently and 30 to 50 per cent production may be increased. The technology has the potential to really double the area under irrigation through judicious use of water with efficiency as high as 80-90% as compared to 30-35% in case of surface irrigation. The technique is very commonly used in Israel. The conditions like agro-climatic, soil and availability of irrigation water are almost similar in Israel and the state of Rajasthan. Hence, it was recommended by the scientists that the said drip irrigation technology might also be applicable and useful in India (*Yojana, July, 2010*).

METHODOLOGY

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 we mean 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. 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 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 individual statements. For evaluating the responses the high and low groups of the individual statements, the critical ratio value was worked out by using the formula and the procedure was used given by *Edwards (1957).*

The critical; ratio (t-value) for each item was worked out by the formula given by *Edwards (1957).*

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\Sigma(X_H - \bar{X}_H)^2 + (X_L - \bar{X}_L)^2}{n(n-1)}}}$$

Where

$$\Sigma(X_H - \bar{X}_H)^2 = \Sigma X^2{}_H - \frac{(\Sigma X_H)^2}{n}$$

$$\Sigma(X_L - \bar{X}_L)^2 = \Sigma X^2{}_L - \frac{(\Sigma X_L)^2}{n}$$

$\Sigma X_H{}^2$ = Sum of squares of the individual scores in the high group

$\Sigma X_L{}^2$ = Sum of squares of the individual scores in the low group.

$\bar{X}_H$ = Mean score of given statement for high group.

$\bar{X}_L$ = Mean score of given statement for low group.

n = Number of respondents in each group.

All the positive and negative items were than subjected to statistical analysis and their critical ratio value was worked out (Table 1).

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

Table 1. Statement selected for Inclusion in Attitude Scale

Attitudinal statements	't' value
Drip irrigation technology increases about 70% extra area under irrigation (+)	2.08
Drip irrigation technology creates difficulty in intercultural practices (-)	1.88
Drip irrigation technology maximize the utilization of available water (+)	2.22
During high wind velocity equal distribution of water is impossible (-)	3.05
Drip irrigation technology saves the crop from frost (+)	3.09
There is inadequate root development through drip irrigation technology (-)	2.58
Labour cost is required less when crop is irrigated by drip irrigation technology (+)	2.03
Spare parts of drip irrigation technology are not easily available in market (-)	2.32
Initial investment for installment of drip irrigation technology is not bearable by farmers (-)	2.35
One can measure water easily with drip system than other methods (+)	1.85
Land leveling is essential if drip irrigation technology used (-)	1.75
Uniform water distribution through drip irrigation technology (+)	1.95
There may not be significant increase in yield through drip irrigation technology (-)	2.07
Subsidy is misutilized in the drip irrigation technology through governments agencies (-)	3.15
The drip irrigation technology is the best method in water scarcity condition (+)	1.96
Physical condition and structure of soil are distributed by continuous use of drip technology of irrigation (-)	4.17
Drip irrigation technology is beneficial for saving water (+)	3.24
Vegetable and fruit production is increased through drip irrigation technology (+)	3.86
Water management is difficult through drip irrigation technology (-)	3.02
Handling of drip set is very complex procedure (-)	3.28
Drip irrigation technology reduces soil erosion (+)	2.75
Soil moisture is maintained through drip irrigation technology around the plants root zone (+)	1.82
Cropping intensity can be increased through drip irrigation technology (+)	1.76
Credit and subsidy facilities are adequate for drip irrigation technology (+)	2.53
Plant growth and plant yield decrease through drip irrigation technology (-)	2.86
Water application rate is high through drip irrigation technology (-)	3.69
Water management is easier by using drip irrigation technology than surface irrigation (+)	2.75
Drip irrigation technology is most suitable for arid region (+)	2.17
Fertilizer and chemicals cannot be applied easily though drip irrigation technology (-)	2.93
Drip irrigation is beneficial only where ground water is available in sufficient quantity (-)	3.65
Drip irrigation technology increases the cost of cultivation of crop (-)	1.96
Surface runoff of irrigation water can be eliminated by drip system of irrigation (+)	2.92
In drip system of irrigation, quantity of water can be controlled according to crop need (+)	1.75
Water application efficiency is achieved by drip irrigation technology (+)	1.85
Drip irrigation technology decrease the fertilizer use efficiency (-)	2.86
By the use of drip irrigation technology nutrient can be preserve into the root zone of crop (+)	2.23
Though drip irrigation technology salt is accumulated near plant root zone (-)	2.32
Through drip irrigation technology water application time is normally long (-)	2.25

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.

CONCLUSION

The advantage of having 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. 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.

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REFERENCES

Edwards, A.L.1957. Technique of attitude scale construction. Appleton century crafts, Inc. Chapt. 6, 149-57.

Kerlingetr, F.N. 1973, Scientific behavioural research. A conceptual primer, New yark, Holt, Rinchart and Winston.

Thurstone, L.L. 1946. The Measurement of attitude. *American Journal of Sociology* . Chicago University, Chicago Press, PP. 39-40.

Wang, A.K. 1932. Suggested Criteria for writing attitude statement. *J. of Socio- Psychology*, **3** : 367-373.

Yojana July, 2010 , p. 11.

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