Mysore J. Agric. Sci., 51 (2) : 297-302, 2017

Development of Scale to Measure Attitude of Schedule Caste Farmers towards Integrated Farming System in Southern Karnataka and Its Application

S. Sujay Kumar and K. Narayanagowda
Department of Agricultural Extension, College of Agriculture, UAS, GKVK, Bengaluru-560 065
E-mail: sujay.suji538@gmail.com

Abstrct

The present study was contemplated to develop and standardize the scale to measure attitude of SC farmers towards IFS in Sothern Karnataka. Based on the review of literature and discussion with the experts, 55 items were enlisted. Out of 55 statements, 17 statements were retained in the final scale. The scale developed was found reliable (0.8911) and valid (0.9439). The reliability and validity of the scale indicates its precision and consistency in assessing the attitude of SC farmers towards IFS. Majority of the respondents (35.00%) had most favourable attitude towards IFS followed by 35.00 per cent had favourable attitude and 30.00 per cent had least favourable attitude towards IFS.

Keywords: Integrated farming system, schedule caste, attitude, reliability and validity

India is an agricultural country where in more than 54.60 per cent of the population depends on agriculture for their livelihood and its contributes 13.70 per cent of Gross Domestic Product (GDP) in the country (2012-13). It has received the highest priority in the programmes of planned change, as it provides employment opportunity for the rural mass by maximizing the productivity in the field of agriculture and allied fields viz. animal husbandry, horticulture, sericulture, etc.

In India, 85 per cent of the land holding are small and marginal. The per capita availability of agriculture land has been decreased from 0.638ha in 1950-51 to 0.271ha by the end of the century and projected further decline to less than 0.10ha by 2020. This situation is further alarming among Scheduled Caste (SC) farmers. This decline trend in size of land holding with climatic changes possess a serious challenge to sustainability and profitability of farm. There is no scope for increasing the farm size, because of steady increase in population with shrinkage of cultivated land as a result of industrialisation and urbanization. Only vertical expansion is possible by integrating appropriate farming components requiring lesser space and time ensuring periodic income to the farmer. Hence, the Integrated Farming System (IFS) is the possible solution for assured regular income for a reasonable standard of living which includes agriculture and allied other enterprises. IFS is a judicious mix of one or more enterprise with cultivation of diversified crops in which there is a complementary effect through effective recycling of wastes/ residues and provide additional source of income. The IFS, therefore, assumes greater importance for sound management of farm resources to enhance the farm productivity, reduce the environmental degradation, improve the quality of life of resource poor farmers and to maintain the sustainability. IFS is not only reliable way of obtaining fairly high productivity with considerable scope for resource recycling, but also a concept of ecological soundness leading to sustainable agriculture.

An innovative action research project entitled Development of SC farm families in 17 districts of Southern Karnataka through Integrated Farming System approach was conceptualized and implemented by the University of Agricultural Sciences, Bengaluru (UASB) during 2009-10. The main objective of project is to improve the livelihood security, productivity, profitability and employment generation of SC farmers through IFS approach.With this background, the present study is taken up with the following specific objectives :

1) To develop and standardize a scale to measure the attitude of SC farmers towards IFS.
2) To analyse the attitude of SC farmers towards IFS.

METHODOLOGY

Attitude is an organized predisposition to think, feel, perceive and behave towards a cognitive object. Likert (1932) defined attitude is the degree of positive or negative disposition/association towards an innovation, objects, programme etc. Similarly, Thurstone (1946) also defined that attitude is a degree of positive or negative effects associated with some psychological object like symbol, person, institute, ideal or idea towards which people can differ in varying degrees.

Attitude in this study is operationally defined as the positive or negative mental predisposition of SC farmers towards IFS. The method of summated rating suggested by Likert (1932) was followed in the development of the scale. The following steps were considered for developing attitude scale to measure the attitude of SC farmers towards IFS.

Collection of Items

The objective of collection of items / statements for the attitude scale construction is to select the items in such a way that acceptance and rejection of each one will imply favourable or unfavourable attitude towards IFS. The items have been carefully edited and selected in accordance with set criteria as the items in any psychological test. The first step in the construction of attitude scale was to collect exhaustive number of statements / items pertaining to the IFS, accordingly, each one expressing some opinion about the psychological object under the study. A large number of items were collected from review of literature, informal discussion with agriculture extension personnel and experts from selected areas. Tentative list of 55 statements pertaining to the attitude of farmers towards IFS was prepared.

Editing of Item

The items collected were edited and modified as attitude statements as per the 14 criteria suggested by Thurstone and Chave (1929). Forty four statements were selected based on 14 criteria and the remaining 11 statements were eliminated.

Relevancy Analysis

Forty four statements were mailed to 105 experts comprising of Assistant Professors (those who had minimum of 3 years' experience), Associate Professors, Professors, Scientists, Extension personnel of State Agricultural Universities, Deemed Universities, National Institutes (NIRD and MANAGE) and ICAR institutes with appropriate instructions to critically judge the items for their relevancy in measuring the attitude of SC farmers towards IFS. They were asked to check each of the statements carefully for being relevant or not relevant using five point continuum *viz.,* Most Relevant (MR), Relevant (R), Somewhat Relevant (SWR), Less Relevant (LR) and Not Relevant (NR) with the score of 4,3,2,1 and 0, respectively. The judges were also requested to make necessary modifications and additions or deletion of components, if they desire so. The relevancy score for each item was found out by adding the relevancy scores of the rating given by 54 judges.

The relevancy score of each statement was ascertained by adding the scores on rating scale for all 54 judges responses. From this data, relevancy percentage and mean relevancy score were worked out for all the statements by using the following formulae :

$$\text{Relevancy Percentage} = \frac{(MRx4)+(Rx3)+(SWRx2)+(LRx1)+(NRx0)}{\text{No. of judges responded x Maximum score}} \times 100$$

$$\text{Mean Relevancy Score} = \frac{R \times 4 + R \times 3 + SWR \times 2 + LR \times 1 + NR \times 0}{\text{No. of judges responded}}$$

Where,

MR= Most Relevant

R= Relevant

SWR= Somewhat Relevant

LR = Less Relevant and

NR= Not Relevant

Maximum possible score = 216 (54 x 4)

Number of Judges = 54

Accordingly, components having relevancy percentage of 70 and above and mean relevancy score of 2.40 and above were considered for further processing and suitably modified as per the comments of experts wherever applicable. Finally, thirty two components were selected for item analysis.

Item Analysis

To delineate the items based on the extent to which they can differentiate the attitude items about IFS as favourable or unfavourable, item analysis was carried out on the 32 items / statements selected after relevancy analysis. For item analysis, the respondents were arranged in ascending order based on attitude scores. Twenty five per cent of the subject with the highest of subjects total score and 25 per cent with the lowest total scores were selected. These two groups provided the criterion groups in terms of which item anaysis was conducted and critical ratio was calculated by using the following formula:

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

Where,

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

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

$\bar{X}_H$ = The mean score on a given statement for the highgroup

$\bar{X}_L$ = The mean score on a given statement for the low group

"X_H^2= Sum of squares of the individual score on a given statement for high group

"X_L^2= Sum of squares of the individual score on a given statement for low group

"X_H= Summation of scores on given statement for high group

"X_L= Summation of scores on given statement for low group

n= Number of judges in low and high groups

t= The extent to which a given statement differentiate between the high and low groups.

Σ = Summation

Based on the item analysis ('t' value), four items were significant at 5 per cent level and thirteen items were significant at 1 per cent level. Seventeen items which were statically significant at 5 per cent and 1 per cent level were finally retained in the scale to measure the attitude of SC farmers towards IFS.

Reliability and validity of the scale

Reliability: Reliability refers to the precision or accuracy of the measurement or scale. A well-made scientific instrument should yield accurate results both at present as well as over time (Ray and Mondal, 2011). Split half method was used for testing reliability scores of two halves and to find out the reliability co-efficient. The split half test reliability formula used is as follows:

$$\mathbf{r}_{1/2} = \frac{N(\sum XY - (\sum X)(\sum Y)}{(N\sum X^2 - (\sum X)^2)(N\sum Y^2 - (\sum Y)^2}$$

Where,

"X=sum of the socres of the odd number items

"Y=sum of the scores of the even numbers items

"X^2= sum of the squares of the odd number items

"Y^2= sum of the squares of the even number items

Split-half method of reliability is used with instrument that has many items and where pairs of items can be considered equivalent. Equivalence indicates the internal consistency of measuring device. The scale developed for the study was administered to 30 SC IFS beneficiary farmers in the non-sample area. Further, the scale was divided into two halves based on odd and even numbered statements and scores were found out from the same respondents for each half. The score of each respondent was calculated with a scoring pattern of 5, 4, 3, 2 and 1 for positive statements and for negative statements scores were reversed. The value of correlation co-efficient was 0.8036 and this was further corrected by using Spearman Brown formula and obtained the reliability co-efficient of the whole set. The 'r' value of the scale was 0.8911, which was highly significant at one per cent level indicating the high reliability of the scale.

Validity refers to the ability of the instrument to measure what it proposed to measure (Mulay and Sabarthanam, 1980). Validity of a scale is the property

which ensures that the test scores obtained measure the variable they are supposed to measure. Content validity or construct validity and criterion validity are the methods generally followed to know the validity of the scale.

According to Kerlinger (1973), content validity is the representativeness or sampling adequacy of the content – the substance, the matter and the topics of a measuring instrument. He further stated that, content validation consists essentially in judgement. Alone or with others, one judges the representativeness of the item. The data was subjected to statistical validity, which was 0.9439, for attitude scale. Hence, the validity co-efficient was also found very high. Therefore, the scale developed is both reliable and valid. The delineation of statements at various steps of attitude scale construction is presented in Table I.

TABLE I

Delineation of statements at various steps of attitude scale construction

Steps in attitude scale construction	No. of Statements	
	Statements considered	Statements retained
Collection of items	55	55
Editing of items	55	44
Relevancy analysis	44	32
Item analysis	32	17
Reliability and validity	17	17

The final scale (Table II) consists of 17 statements of which, 12 are positive statements and the remaining five statements are negative.The

TABLE II

Statement considered to measure the attitude of scheduled cast farmers towards IFS

Statements	SA	A	UD	DA	SDA
Integrated farming system is an innovative approach					
Farmers view agriculture as a profitable venture due to IFS					
IFS is the best approach among the different farming systems					
Farm mechanization in IFS is very difficult due to integration of various enterprises					
The wastage of crop residues/by products is nil in IFS					
IFS improves the soil fertility status					
The labour requirement is more in IFS compared to other farming systems					
The social status of IFS farmers is better compared to non IFS farmers					
IFS demands more quantity of inputs than other farming systems					
Scope of adoption of Indigenous technical knowledge in IFS is more compared to other farming systems					
IFS requires more initial investment than other enterprises					
The IFS can be adopted by all categories of the farmers					
Management of different agriculture and allied component in IFS is very cumbersome					
There is more scope for organic farming in IFS than other farming systems					
The quantity of inputs required can be reduced due to recycling of the waste in the IFS farm					
The farm management in IFS requires specialized skills which are lacking among most of the farmers.					
IFS provides employment for all the members of the family					

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

response could be collected on a five point continuum, namely, strongly agree, agree, undecided, disagree and strongly disagree with assigned scores of 5,4,3,2 and 1, for positive statements and vice versa for negative statements.The minimum and maximum score one could get is 17 and 85, respectively. The attitude score of a respondent can be calculated by adding up the scores obtained by him/her on all the items. The respondents will be categorized into less favourable, favourable and more favourable categories by considering mean and standard deviation. Higher the attitude score indicates the high favorableness of respondents towards IFS and lesser the attitude score indicates less favorableness towards IFS.

Results and Discussion

A perusal of Table III revealed the district-wise attitude of respondents towards IFS. In Chitradurga district, majority of the respondents (55.00%) had favourable attitude towards IFS followed by 28.33 per cent had most favourable attitude and 16.66 per cent had least favourable attitude towards IFS.

In Chickballapur district, half (50 %) of the respondents had favourable attitude towards IFS followed by 30.00 per cent had most favourable and 20.00 per cent had least favourable level of attitude towards IFS.

In Mandya district, more than one third of the respondents (38.33%) had most favourable attitude towards IFS followed by 31.66 per cent had favourable and 30.00 per cent had least favourable attitude towards IFS.

In Shimoga district, more than one third of the respondents (36.33%) had most favourable attitude towards IFS followed by 33.33 per cent had least favourable and 30.00 per cent favourable attitude towards IFS.

More than one third of the respondents (35.00%) had most favourable attitude towards IFS followed by 35.00 per cent favourable and 30.00 per cent least favourable level of attitude towards IFS (Table IV).

Table III

District-wise attitude of respondents towards IFS

Categories		Number	Per cent
Chitradurga			
Least Favorable		10	16.66
Favorable		33	55
Most Favorable		17	28.33
	Total	**60**	**100**
Chickballapura			
Least Favorable		12	20
Favorable		30	50
Most Favorable		18	30
	Total	**60**	**100**
Mandya			
Least Favorable		18	30
Favorable		19	31.66
Most Favorable		23	38.33
	Total	**60**	**100**
Shimoga			
Least Favorable		20	33.33
Favorable		18	30
Most Favorable		22	36.66
	Total	**60**	**100**

Table IV

Attitude of respondents towards IFS in Southern Karnataka

Categories	Number	Per cent
Least Favorable	72	30
Favorable	84	35
Most Favorable	84	35
Total	**240**	**100**

Favourable attitude act as a factor for selection of enterprises to stabilize the income, in addition to maximise input efficiency and higher rate of return.

It can be concluded that the attitude scale developed was found to reliable and valuable, therefore it can precisely measure the attitude of SC farmers towards IFS. Therefore, the scale can be used by researchers to measure the attitude of SC farmers towards IFS.

REFERENCES

KERLINGER, E. N., 1973, Foundations of Behavioural Research, New York: Holt, Rine Hart and Winston.

LIKERT, R. A., 1932, A Technique for the measurement of attitudes. *Archives of Psychology,* New York, p. 140.

MULAY, S. AND SABARTHANAM, V. E., 1980, Research methods in extension education. *Manasayan*, New Delhi.

RAY, G. L. AND MONDAL, S., 2011, Research methods in social sciences and extension education, Kalyani Publications, Calcutta, India.

THURSTONE. L. L, 1946, The measurement of attitude. *American J. Sociol.*, Chicago University Press, p. 39-50.

THURSTONE. L. L. AND CHAVE, E. C., 1929, The measurement of opinion. *J. Abnormal Social Psych.*, **22** : 415-430.

(*Received :* May, 2017 *Accepted :* June, 2017)